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EURASIAN WATER MILFOIL
ALBERTA LAKE SURVEY
1982

Alberta
ENVIRONMENT
Pollution Control Division
Pesticide Chemicals Branch

CANADIANA
SEP 2 5 1990

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ALBERTA LAKE SURVEY

1982

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Pollution Control Division
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February, 1984

ABSTRACT

Thirty-four Alberta lakes and reservoirs were surveyed during 1982 to provide early detection of possible Eurasian water milfoil (*Myriophyllum spicatum*) infestations. Due to time and manpower limitations, only high priority sites (particularly boat launch areas) were surveyed. Aquatic plant species observed at each survey site were documented, as well as site descriptions, water use, and adjacent land use. No Eurasian water milfoil was found at any of the water bodies surveyed.

Each of the 34 water bodies surveyed during 1982 presented a variety of habitats, often allowing the production of diverse and abundant aquatic flora. The basic habitat requirements necessary for the growth of Eurasian water milfoil were present in all water bodies surveyed.

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1.0 INTRODUCTION

Eurasian water milfoil (*Myriophyllum spicatum* L.) is a perennial submergent aquatic plant, originally endemic to Europe and Asia. The introduction of this nuisance weed to North America is believed to have first occurred in Chesapeake Bay, Maryland in the latter part of the 19th century (Bayley *et al.*, 1968). Since that time, Eurasian water milfoil has become a major nuisance in at least 22 States, including Washington (Stockerl and Kent, 1984). The presence of *M. spicatum* in Canadian waters was first recorded in Rondeau Provincial Park (Lake Erie) in 1961 (Wile, 1978). Its current distribution in Canada includes a number of water bodies in southern Ontario and Quebec, and in the Okanagan basin and Lower Mainland region of British Columbia. Most recently (in the summer of 1981), Eurasian water milfoil spread to Champion Lake near Trail, B.C. and to Shuswap Lake north of Vernon, B.C.

The highly adaptive nature and prolific growth rate of *M. spicatum* resulted in serious problems in many valuable water systems throughout North America, for example: interference with boat navigation, reduced quality of water supplies, reduction of shore fish spawning habitat, and the decline of the recreational capability and aesthetic value of many water systems.

Localized control measures may lower the nuisance level and reduce further spread; however, mechanical and chemical controls are often costly and labour intensive. Moreover, attempts to control established Eurasian water milfoil infestations show that eradication is difficult, and in most cases unrealistic (Anon., 1981). "Detecting and responding to early infestations of Eurasian water milfoil is necessary to avoid the high costs and intrinsic difficulties involved in having to deal

with established weed populations" (Shea and O'Shea, 1981). This demonstrates the necessity to identify and control infestations while still in the pioneer stage.

The recent (1981) eastward spread of M. spicatum in British Columbia indicates that the threat of this weed entering Alberta waters is a real one and may be only a matter of time. Information regarding Eurasian water milfoil's ability to tolerate and thrive in a wide range of habitats and environmental conditions (Stockerl and Kent, 1984) indicates that it could survive in Alberta waters, if introduced. The negative implications for Alberta's already limited supply of high quality recreational lakes, as well as for the extensive irrigation systems in the south, are many.

During the summer and fall of 1982, 34 selected lakes and reservoirs were surveyed to provide the early detection of possible Eurasian water milfoil infestations. This report provides a summary of the survey results and provides an information base.

2.0 METHODS

Thirty-four Alberta lakes and reservoirs (Table 1) were surveyed for the presence of Eurasian water milfoil between August 3 and October 21, 1982. These lakes and reservoirs included the 16 water bodies sampled by Shea and O'Shea (1981). The additional 18 water bodies surveyed were selected on the basis of degree of recreational use by boaters, and susceptibility to nuisance aquatic plant growth. The general location of the 34 water bodies surveyed is indicated in Figures 1-3.

Table 1: Alberta Lakes and Reservoirs Surveyed for the Presence of Eurasian Water Milfoil in 1982.

Ref. #	Name of Lake or Reservoir	Location (Twp-Rge-WM)	General Location
1.	Skeleton Lake	(65-18,19-W4)	5 km NE - Boyle
2.	Cross (Steele) Lake	(65-26-W4)	130 km N - Edmonton
3.	Long Lake	(63-18-W4)	110 km NE - Edmonton
4.	Cold Lake	(64-1-W4)	45 km NE - Bonnyville
5.	Moose Lake	(60-7-W4)	4 km W - Bonnyville
6.	Garner Lake	(60-12-W4)	5 km N - Spedden
7.	Muriel Lake	(59-5-W4)	11 km S - Bonnyville
8.	Lac La Nonne	(57-3-W5)	60 km NW - Edmonton
9.	Wabamun Lake	(52,54-5-W5)	40 km W - Edmonton
10.	Miquelon Lake	(49-19-W4)	26 km N - Camrose
11.	Wizard Lake	(48-27-W4)	16 km S - Calmar
12.	Pigeon Lake	(47-1-W5)	38 km W - Wetaskiwin
13.	Gull Lake	(41-28-W4)	14 km W - Lacombe
14.	Buffalo Lake	(40-20-W4)	10 km SE - Bashaw
15.	Crimson Lake	(40-8-W5)	10 km NW - Rocky Mtn. House
16.	Twin Lakes	(40-7-W5)	5 km NW - Rocky Mtn. House
17.	Sylvan Lake	(39-1,2-W5)	19 km W - Red Deer
18.	Pine Lake	(36-24-W4)	24 km E - Penhold
19.	Chestermere Lake	(24-28-W4)	12 km E - Calgary
20.	Kananaskis Lakes	(13-20,-9-W5)	85 km SW - Calgary
21.	McGregor Reservoir	(16-21-W4)	28 km E - Vulcan
22.	Lake Newell Reservoir	(17-15-W4)	14 km S - Brooks
23.	Chain Lake Reservoir	(15-2-W5)	38 km SW - Nanton
24.	Travers Reservoir	(14-20-W4)	16 km E - Champion
25.	Keho Lake Reservoir	(11,12-22,23-W4)	5 km SE - Barons
26.	Park Lake Reservoir	(10-22-W4)	14 km NW - Lethbridge
27.	Chin Lakes Reservoir	(7-16,17-W4)	20 km S - Taber
28.	Elkwater Lake	(8-3-W4)	58 km SE - Medicine Hat
29.	Spruce Coulee Reservoir	(8-2-W4)	58 km SE - Medicine Hat
30.	Reesor Lake Reservoir	(8-1-W4)	58 km SE - Medicine Hat
31.	Beauvais Lake	(5-1-W5)	20 km SW - Pincher Creek
32.	Waterton Reservoir	(4-28-W4)	20 km SE - Pincher Creek
33.	St. Mary Reservoir	(5-24-W4)	8 km W - Spring Coulee
34.	Police (Outpost) Lake	(1-26-W4)	29 km SW - Cardston

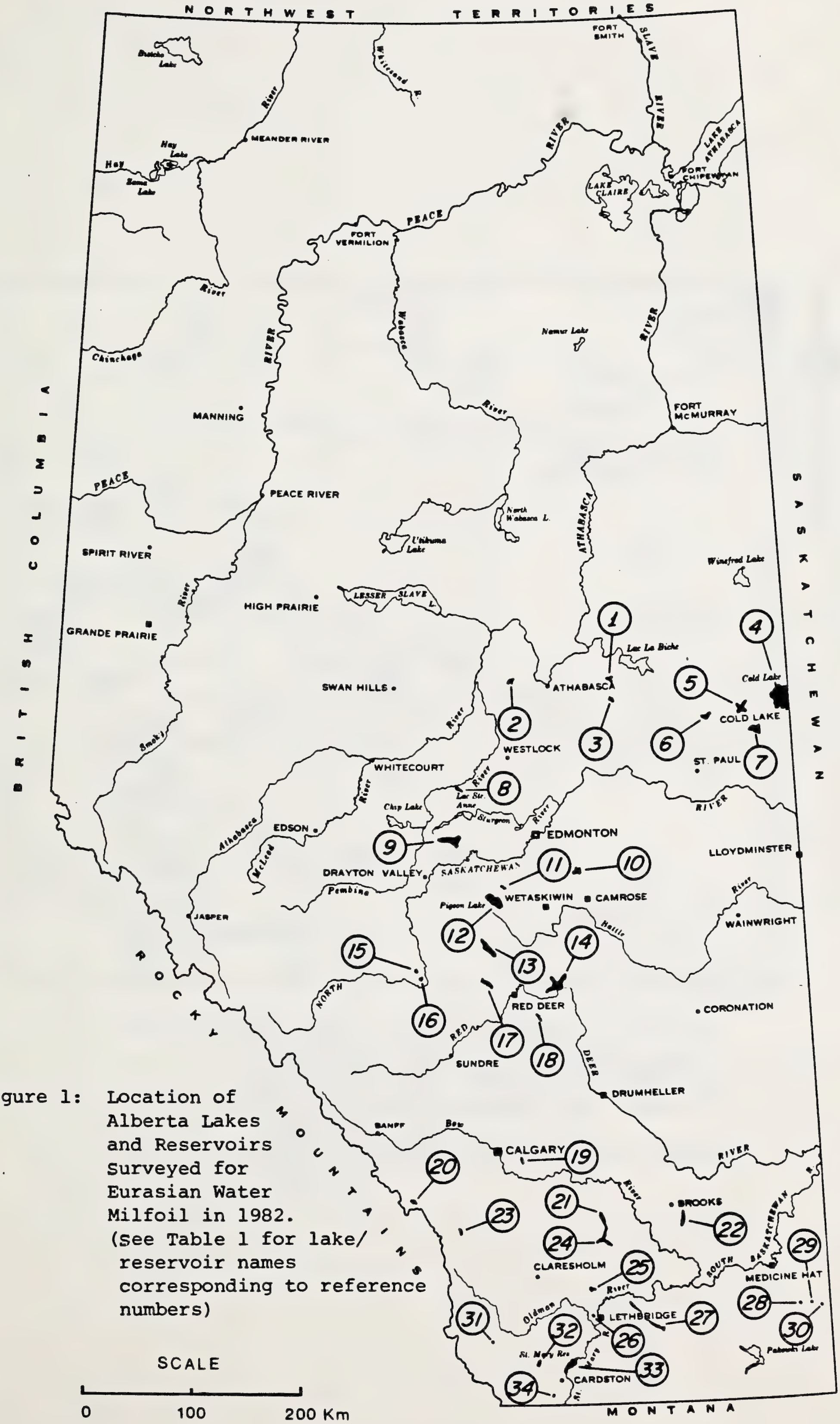

Figure 1: Location of Alberta Lakes and Reservoirs Surveyed for Eurasian Water Milfoil in 1982. (See Table 1 for lake/ reservoir names corresponding to reference numbers)

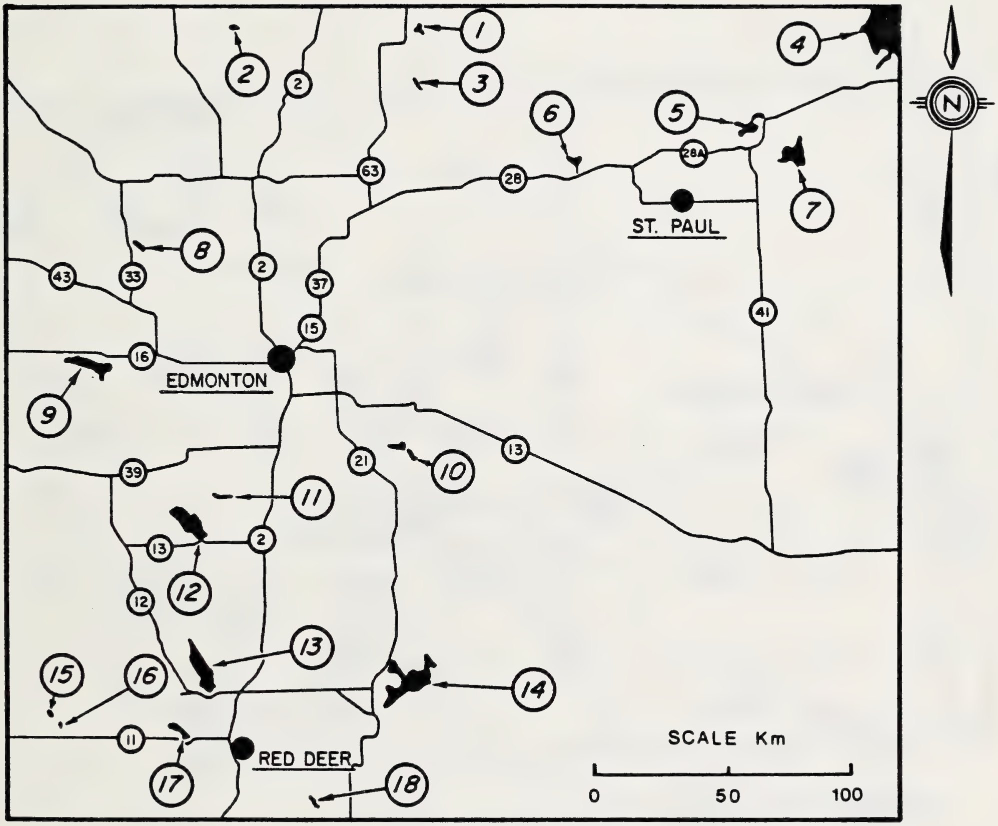

Figure 2: Location of Northern Alberta Lakes and Reservoirs Surveyed for Eurasian Water Milfoil in 1982. (See Table 1 for lake/ reservoir names indicated by reference numbers above).
(NOTE: Numbers in small circles indicate highways).

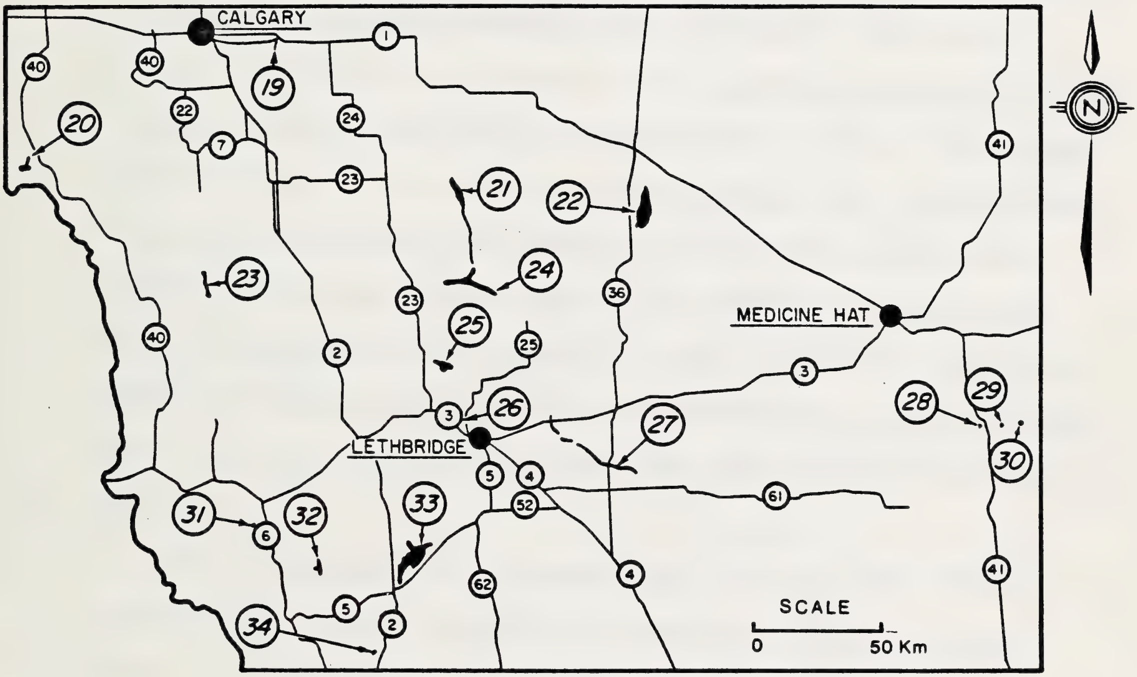

Figure 3: Location of Southern Alberta Lakes and Reservoirs Surveyed for Eurasian Water Milfoil in 1982. (See Table 1 for lake/reservoir names indicated by reference numbers above). (NOTE: Numbers in small circles indicate highways).

Due to time constraints imposed by a late survey start, and the large number of lakes included in the survey schedule, the spot check approach used in the 1981 survey was adopted here. Rather than surveying the entire littoral zone, only certain areas considered to be priority sites were surveyed at each lake and reservoir. Since boater transport has been implicated with Eurasian water milfoil spread (Scales and Bryan, 1979), areas surrounding boat launches and docks were considered priority sites. Public launches, particularly those at lakeside provincial parks were given the highest priority. Other areas checked but considered to be lower priority sites were: 1) beach areas frequented by boaters; 2) sheltered bays conducive to aquatic plant growth; 3) areas known to be frequented by waterfowl (waterfowl also have been implicated in the spread of Eurasian water milfoil (Buchanan, 1976)); 4) windward shores; and 5) outlet streams having flow regulating structures. All sites surveyed during 1981 were included in the 1982 survey.

Sites which have easy road access were visited by land. Sites or shore areas not readily accessible or sampled by land were surveyed using a small power boat. In a number of instances, the survey of intended sites by boat was abandoned due to unfavourable weather conditions.

Aquatic plant species composition was documented at each site. Particular attention was given to Myriophyllum spp. The dominant or most abundant species was also recorded at each site. Minimal effort was made to collect and identify marginal and emergent aquatic plants to species level. Identification of aquatic plant species was achieved through visual observation from the water surface and by identification of collected samples. Aquatic vegetation beyond the field of clear view

(i.e., deep or very turbid water) was sampled by dragging a weed rake along the bottom or by casting out and dragging a four prong grapnel anchor attached to a rope. Both methods were effective in retrieving aquatic plants, often complete with roots. A minimum of four sampling efforts were made at each site where this technique was utilized.

Accurate sampling at high priority sites having poor surface visibility was achieved by snorkelling to the bottom. This afforded reasonably accurate and thorough visual inspection and the collection of samples was done by hand. Final identification of collected plants was done on shore. Collected plant specimens which were in good condition were appropriately labelled and preserved. The purpose of preserving collected plants was to establish a collection of plant species representative of each surveyed water body.

In addition to identifying, documenting, and collecting aquatic plants, site descriptions and general resource folio data were collected for each site, such as location of major weed beds, dominant species, shoreline development, water use, recreational areas, underwater obstructions, location of major inflows and outflows, sediment type, water fluctuation, and direction of prevailing winds.

The boat use assessment survey conducted in 1981 (Shea and O'Shea, 1981) was discontinued in 1982. A census of boat use based on observed boating activity during aquatic plant surveys is not a reliable measurement since boating activity is influenced directly by weather conditions, time of day and season.

3.0 RESULTS AND DISCUSSION

Forty-two aquatic plant species belonging to 23 genera (Table 2) were identified during the 1982 survey of 34 Alberta lakes and

Table 2: Aquatic Plant Species Identified During 1982 Eurasian Water Milfoil Lake Survey. (N=42)

	Scientific Name	Common Name
1.	Alisma gramineum Gmel.	Narrowleaf waterplantain
2.	Callitriche hermaphroditica L.	Autumnal starwort
3.	Callitriche sp.	Starwort
4.	Ceratophyllum demersum L.	Common coontail
5.	Chara sp.	Stonewort
6.	Elodea canadensis Michx.	Canada Waterweed
7.	E. longivaginata St. John*	Waterweed
8.	Equisetum fluviatile L.	Water horsetail
9.	E. palustre L.	Marsh horsetail
10.	Hippuris vulgaris L.	Mare's tail
11.	Juncus sp.	Rush
12.	Lemna minor L.	Lesser duckweed
13.	L. trisulca L.	Star duckweed
14.	Myriophyllum exalbescens Fern.	Northern water milfoil
15.	Najas flexilis (Willd) R. & S.	Slender naiad
16.	Nuphar variegatum Engelm.	Yellow water lily
17.	Phragmites communis Trin.	Reed grass
18.	Polygonum amphibium Muhl.*	Water smartweed
19.	P. natans Eaton	Water smartweed
20.	Potamogeton berchtoldii Fieb.*	Berchtold's pondweed
21.	P. epihydrous Raf.*	Ribbonleaf pondweed
22.	P. friesii Rupr.	Fries pondweed
23.	P. gramineus L.	Variable pondweed
24.	P. natans L.	Broad-leafed pondweed
25.	P. pectinatus L.	Sago pondweed
26.	P. praelongus Wulf.	Whitestem pondweed
27.	P. pusillus L.	Small-leaf pondweed
28.	P. richardsonii (Benn.) Rydb.	Richardson pondweed
29.	P. vaginatus Turcz.	Large-sheath pondweed
30.	P. zosteriformis Fern.	Flat-stemmed pondweed
31.	Ranunculus aquatilis L.*	White water-crowfoot
32.	R. circinatus Sibth.	White waterbuttercup
33.	Ranunculus sp.	
34.	Ruppia maritima L.*	Ditchgrass or Widgeongrass
35.	Sagittaria cuneata Sheld.	Arrowhead
36.	S. latifolia Willd.	Broadleaf arrowhead
37.	Sagittaria sp.	
38.	Scirpus sp.	Bulrush
39.	Sparganium eurycarpum Engelm.	Giant bur-reed
40.	Typha latifolia L.	Common cattail
41.	Utricularia vulgaris L.	Common bladderwort
42.	Zannichellia palustris L.	Horned pondweed

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* Identification not positive due to poor specimen or lack of reproductive structures.

reservoirs. Positive identification of several specimens to the species level was not achieved. Table 3 provides a list of aquatic plant species observed and collected at each water body surveyed. The dominant or most abundant species within each water body is also shown in Table 3.

Eurasian water milfoil was not found at any of the inspected sites. However, the genus *Myriophyllum* (water milfoil) was represented by *M. exalbescens* Fern. at 28 of the 34 water bodies surveyed. *Potamogeton richardsonii* (Benn.) Rydb. was also found in 28 lakes and reservoirs. *Myriophyllum exalbescens* was considered the dominant species in seven water bodies while *P. richardsonii* was dominant in nine. Other submergent species commonly observed included *Potamogeton pectinatus* L., *P. vaginatus* Turcz., and *Ceratophyllum demersum* L. The occurrence of the aquatic plant species is summarized in Table 4.

The greatest diversity of species (17 spp.) was observed at Lake Newell. Other lakes which demonstrated high species diversity were Beauvais Lake (16 spp.), Elkwater Lake (16 spp.), Wabamun Lake (16 spp.), and Twin Lakes (15 spp.).

The lowest species diversity was noted at Upper and Lower Kananaskis Lake. Only one species (*Equisetum palustre* L.) was observed in these lakes. The low species diversity and general scarcity of aquatic plant growth observed in the Kananaskis Lakes is probably due to an extended period of ice cover, a seasonal lake drawdown of as much as 15 metres, and the oligotrophic nature of the lakes. Despite the scarcity of observed aquatic plant growth, the popularity of the Kananaskis lakes for boating and fishing warrants spot checks.

Table 3: Aquatic Plant Species Observed at Each Lake or Reservoir During 1982 Eurasian Water Milfoil Lake Survey.

Name of Lake or Reservoir	Aquatic Plant Species Observed[1]	
Beauvais Lake	Ceratophyllum demersum	Potamogeton natans
	*Chara sp.	P. pectinatus
	Elodea canadensis	P. praelongus
	Equisetum fluviatile	P. richardsonii
	*Juncus sp.	P. zosteriformis
	Myriophyllum exalbescens	*Ranunculus circinatus
	*Nuphar variegatum	*Scirpus sp.
	*Polygonum natans	*Typha latifolia
Buffalo Lake	*Juncus sp.	*Scirpus sp.
	Potamogeton pectinatus	*Sparganium eurycarpum
	P. vaginatus	
Chain Lakes	Alisma gramineum	Potamogeton natans
	Callitriche sp.	P. pectinatus
	Ceratophyllum demersum	P. richardsonii
	*Chara sp.	Ranunculus circinatus
	Hippuris vulgaris	Utricularia vulgaris
	Myriophyllum exalbescens	
Chestermere Lake	Alisma gramineum	P. praelongus
	Ceratophyllum demersum	*P. richardsonii*
	*Chara sp.	*P. vaginatus
	Lemna trisulca	*P. zosteriformis
	Myriophyllum exalbescens	Sagittaria sp.
	Potamogeton friesii	*S. cuneata
	P. gramineus	*Typha latifolia
	*P. pectinatus	
Chin Lakes Reservoir	*Alisma gramineum	*Potamogeton pectinatus*
	*Chara sp.	*P. richardsonii*
	*Elodea canadensis	*Ranunculus circinatus
Cold Lake	*Myriophyllum exalbescens	*P. richardsonii
	*Potamogeton pectinatus	+*Ranunculus aquatilis
Crimson Lake	*Equisetum fluviatile	P. praelongus
	Myriophyllum exalbescens	*P. pusillus*
	Najas flexilis	P. richardsonii
	*Nuphar sp.	P. zosteriformis
	Potamogeton natans	Sagittaria sp.
	P. pectinatus	

---

[1] *Dominant or most abundant species indicated by italics.*

* *Specimens which were not collected.*

+ *Identification not positive.*

Table 3 continued

Name of Lake or Reservoir	Aquatic Plant Species Observed[1]	
Cross Lake	*_Ceratophyllum demersum_ *Lemna minor *L. trisulca *_Myriophyllum exalbescens_ *Nuphar sp.	*Potamogeton richardsonii *P. vaginatus *Ranunculus sp. *Scirpus sp. *Typha latifolia
Elkwater Lake	Callitriche hermaphroditica Ceratophyllum demersum *Equisetum fluviatile *Juncus sp. Lemna minor L. trisulca Myriophyllum exalbescens Polygonum natans	Potamogeton friesii P. pectinatus _P. richardsonii_ *Ranunculus sp. Sagittaria sp. *Scirpus sp. *Typha latifolia Utricularia vulgaris
Garner Lake	*Lemna trisulca *Myriophyllum exalbescens *_Potamogeton pectinatus_	*P. richardsonii *P. vaginatus *Scirpus sp.
Gull Lake	*Juncus sp. _Potamogeton pectinatus_ P. vaginatus	*Scirpus sp. *Typha latifolia
Kananaskis Lake (Upper and Lower)	_Equisetum palustre_	
Keho Lake	*Alisma gramineum *Equisetum palustre *Juncus sp. *Myriophyllum exalbescens *Potamogeton pectinatus *P. praelongus	*_P. richardsonii_ *P. vaginatus +*Ranunculus aquatilis *Sagittaria cuneata *Zannichellia palustris
Lac La Nonne	Ceratophyllum demersum *Lemna minor L. trisulca Myriophyllum exalbescens *Phragmites communis +Potamogeton epihydrous P. pectinatus	_P. richardsonii_ P. vaginatus P. zosteriformis Sagittaria latifolia *Scirpus sp. Typha latifolia
Lake Newell	Alisma gramineum _Ceratophyllum demersum_ *Chara sp. _Elodea canadensis_ *Juncus sp. Lemna trisulca Myriophyllum exalbescens +Polygonum amphibium P. natans	*Potamogeton friesii P. gramineus *P. pectinatus P. richardsonii P. zosteriformis Ranunculus sp. *Sagittaria sp. *Scirpus sp. *Typha latifolia

---

[1] _Dominant or most abundant species indicated by italics._
* Specimens which were not collected.
+ Identification not positive.

Table 3 continued

Name of Lake or Reservoir	Aquatic Plant Species Observed[1]	
Long Lake	*Ceratophyllum demersum *Lemna trisulca Myriophyllum exalbescens	*Potamogeton richardsonii *P. vaginatus *Scirpus sp.
McGregor Reservoir	*Ceratophyllum demersum *Elodea canadensis *Myriophyllum exalbescens *Potamogeton pectinatus *P. richardsonii	*P. zosteriformis *_Ranunculus circinatus_ *Sagittaria sp. *Typha latifolia
Miquelon Lake	_Potamogeton pectinatus_ +*Ruppia maritima	*Scirpus sp. *Typha latifolia
Moose Lake	*Ceratophyllum demersum *Lemna trisulca *_Myriophyllum exalbescens_	*Potamogeton pectinatus *P. richardsonii *P. vaginatus
Muriel Lake	*Ceratophyllum demersum *Hippuris vulgaris *Myriophyllum exalbescens *Potamogeton pectinatus *P. richardsonii	*_P. vaginatus_ *Scirpus sp. *Typha latifolia Utricularia vulgaris
Park Lake	*Ceratophyllum demersum *Juncus sp. Myriophyllum exalbescens Najas flexilis _Potamogeton pectinatus_	_P. richardsonii_ P. zosteriformis *Sagittaria sp. *Typha latifolia
Pigeon Lake	*Ceratophyllum demersum *Lemna trisulca *Myriophyllum exalbescens *Najas flexilis	Potamogeton gramineus P. pectinatus _P. richardsonii_ *Scirpus sp.
Pine Lake	*Ceratophyllum demersum *Elodea canadensis *Lemna trisulca _Myriophyllum exalbescens_ Potamogeton pectinatus	P. richardsonii P. vaginatus *Scirpus sp. *Typha latifolia
Police Lake	*Chara sp. *Myriophyllum exalbescens *Polygonum natans Potamogeton pectinatus	P. richardsonii *P. vaginatus *P. zosteriformis *Scirpus sp.
Reesor Reservoir	*_Ceratophyllum demersum_ *C. hermaphroditica +Elodea longivaginata *Lemna minor *Myriophyllum exalbescens *Polygonum natans	*Potamogeton natans *_P. pectinatus_ *P. richardsonii +*Ranunculus aquatilis Sagittaria sp.

---

[1] _Dominant or most abundant species indicated by italics._

* Specimens which were not collected.

+ Identification not positive.

Table 3 continued

Name of Lake or Reservoir	Aquatic Plant Species Observed[1]	
St. Mary Reservoir	Myriophyllum exalbescens +Potamogeton berchtoldii	P. pectinatus _P. richardsonii_
Skeleton Lake	*Ceratophyllum demersum *Chara sp. *Lemna minor *L. trisulca _*Myriophyllum exalbescens_	*Potamogeton pectinatus *P. richardsonii *Ranunculus sp. *Scirpus sp.
Spruce Coulee Reservoir	*Alisma gramineum *Chara sp. *Equisetum fluviatile *Juncus sp. *Lemna minor *Myriophyllum exalbescens	*Potamogeton pectinatus *P. richardsonii _*Ranunculus circinatus_ *Sagittaria sp. *Typha latifolia
Sylvan Lake	*Chara sp. Lemna minor Myriophyllum exalbescens Potamogeton pectinatus	_P. richardsonii_ P. vaginatus *Scirpus sp. *Typha latifolia
Travers Reservoir	*Alisma gramineum *Ceratophyllum demersum *Chara sp. *Juncus sp. *Myriophyllum exalbescens	*Potamogeton pectinatus _*P. richardsonii_ *P. zosteriformis *Ranunculus circinatus
Twin Lakes	*Chara sp. Equisetum fluviatile Hippuris vulgaris Myriophyllum exalbescens _Nuphar variegatum_ *Polygonum natans Potamogeton gramineus P. natans	P. praelongus P. pusillus Sagittaria sp. *Scirpus sp. Sparganium sp. *Typha latifolia Utricularia vulgaris
Wabamun Lake	*Ceratophyllum demersum *Chara sp. Elodea canadensis Hippuris vulgaris Lemna trisulca _Myriophyllum exalbescens_ Najas flexilis Potamogeton natans	P. pectinatus P. richardsonii P. vaginatus *P. zosteriformis Ranunculus circinatus *Sagittaria sp. *Scirpus sp. *Typha latifolia
Waterton Reservoir	*Juncus sp. _*Scirpus sp._	
Wizard Lake	*Myriophyllum exalbescens Najas flexilis Nuphar sp.	*Potamogeton pectinatus P. richardsonii Scirpus sp.

---

[1] _Dominant or most abundant species indicated by italics._

* Specimens which were not collected.

+ Identification not positive.

Table 4: Occurrence of Aquatic Plants in Alberta Lakes and Reservoirs Surveyed During 1982. (N=34)[1]

Species[2]	Number of Lakes and Reservoirs in Which Species Occurred
M. exalbescens	*(28)
P. richardsonii	*(28)
P. pectinatus	*(27)
Scirpus sp.	*(23)
C. demersum	*(18)
T. latifolia	*(14)
L. trisulca	*(12)
P. vaginatus	*(12)
Sagittaria sp.	*(9)
Juncus sp.	*(8)
L. minor	*(7)
P. natans	*(7)
P. zosteriformis	*(7)
E. canadensis	*(6)
E. fluviatile	*(6)
H. vulgaris	*(5)
Polygonum natans	*(5)
Ranunculus sp.	*(5)
R. circinatus	*(5)
A. gramineum	*(4)
N. flexilis	*(4)
N. variegatum	*(4)
P. gramineus	*(4)
P. praelongus	*(4)
U. vulgaris	*(4)
P. friesii	*(3)
R. aquatilis	*(3)
C. hermaphroditica	*(2)
P. pusillus	*(2)
S. eurycarpum	*(2)
Callitriche sp.	*(1)
E. longivaginatus	*(1)
E. palustre	*(1)
P. berchtoldii	*(1)
P. amphibium	*(1)
P. communis	*(1)
P. epihydrous	*(1)
R. maritima	*(1)
Sparganium sp.	*(1)
S. cuneata	*(1)
S. latifolia	*(1)
Z. palustris	*(1)

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[1] Total number of lakes and reservoirs surveyed.

[2] Refer to Table 2 for complete genus name.

Lakes having high alkalinity or pH (i.e., approaching or above pH 9.0) such as Buffalo, Garner, Gull and Miquelon lakes, had relatively low species diversity. The dominant or most abundant species in these lakes were _P. pectinatus_ and _P. vaginatus_. The presence of _Ruppia maritima_ L. was also suspected; _Ruppia_ sp. is difficult to differentiate from _P. vaginatus_ during immature growth stages. Further details regarding the survey results and descriptions of survey sites is discussed in Section 3.1.

3.1 SITE DESCRIPTIONS

1. SKELETON LAKE (Figure 4)

Date: October 19, 1982

* Site 1. South-east corner of the lake, boat launches, wharfs and pier at Skeleton Lake Resort. Many dense "clumps" of _Myriophyllum exalbescens_ Fern. growing around wharfs. Plants apparently mature but no flowering or seed bearing specimens noted. Turion formation on _M. exalbescens_ common. _Potamogeton pectinatus_ L. was also abundant throughout the bay area. Substrate was sandy mud.

- The entire east end including the resort beach area is considered high potential habitat for Eurasian water milfoil.

2. CROSS LAKE (Figure 5)

Date: October 19, 1982

Site 1. West shore, provincial park boat launch and beach area. No rooted aquatic plants were observed. Numerous fragments on shore including _M. exalbescens_. _Lemna trisulca_ L. was the dominant species. Inshore substrate was sand-gravel.

- Lack of visible weed beds apparently a seasonal phenomonon. Park Ranger stated that nuisance aquatic weed growth does occur during summer months.

Site 2. West end of the outflow channel area near bridge crossing. Numerous specimens of _M. exalbescens_ and _Ceratophyllum demersum_ observed beneath thin ice cover. Substrate- mud.

- Aquatic plant surveys of Cross Lake should be conducted before mid-September due to onset of fall senescence.

* See Maps (Appendix 1) for site locations.

3. LONG LAKE (Figure 6)

Date: October 20, 1982

* Site 1. West shore, provincial park day use area, has two launches and two portable wharfs. No rooted aquatic plants noted, only scattered fragments, including *M. exalbescens*. Lack of visible aquatic plant growth apparently due to season.

Site 2. West shore, provincial park boat rental service and day use area. No rooted plants observed, only a few fragments washed up on shore. Inshore substrate sand-gravel.

4. COLD LAKE (Figure 7)

Date: October 21, 1982

Site 1. South-west shore, Cold Lake Provincial Park boat launch and wharf area. Launch is double width with wharf on each side. Sparse rooted growth around launch area including *M. exalbescens*, *Potamogeton richardsonii*, *P. pectinatus* and *Ranunculus* sp. Rock and gravel substrate.

Site 2. Town of Cold Lake, boat launch and large pier area with breakwater. Only *Ranunculus* sp. present at boat launch. Numerous rooted aquatic plants on sheltered side of breakwater including *M. exalbescens*, *P. richardsonii* and *P. pectinatus*.

- Sites 1 and 2 should be surveyed by late August.

5. MOOSE LAKE (Figure 8)

Date: October 21, 1982

Site 1. North shore, provincial park car-topper and canoe launch. No rooted plants visible, only fragments, which included *M. exalbescens*. Water very shallow around launch.

Site 2. Provincial park, main boat launch (double width). Well protected bay. Many rooted *M. exalbescens* on both sides of launch, some with red stems, and extending into very shallow water (0.3 m). Many rooted plants throughout the bay area included *P. pectinatus*, *P. richardsonii* and *C. demersum*.

- Park ranger stated that aquatic weeds are a major nuisance during summer.
- Sites should be surveyed during summer months.
- Outflow area should be included as well.

* See Maps (Appendix 1) for site locations.

6. GARNER LAKE (Figure 9)

Date: October 20, 1982

* Site 1. South-east corner, provincial park main boat launch and beach area. Sparse mixed growth of rooted aquatic plants around launch and wharf area. Species included *M. exalbescens* and *P. pectinatus* (dominant). Many fragments of *P. pectinatus* and *P. vaginatus* were found on the beach.

Site 2. Pier west of park beach area. Only scattered areas of weed growth were visible (including *M. exalbescens*).

Site 3. Boat launch and wharfs on north end of park. Sparse growth, mainly fragments on shore.
- Park employees state that considerable weed problems occur in summer.
- Sites should be surveyed during summer months.

7. MURIEL LAKE (Figure 10)

Date: October 21, 1982

Site 1. South-east corner, public beach and stream inflow area. Dense mats of plant fragments on beach, especially *P. pectinatus* and *P. vaginatus* as well as *Myriophyllum exalbescens* fragments.

Site 2. South-west corner, public boat launch and beach area. Many private cottages just above beach. Sand-gravel substrate. No visible rooted aquatic plants (only fragments).

Site 3. Provincial Park campground and launch north of Gurneyville. Sparse plant growth. Sand-gravel-rock substrate. Small sandy beach area.
- Resort-marina near Gurneyville warrants checking.

8. LAC LA NONNE (Figure 11)

Date: August 23, 1982

Site 1. South-west corner, Kildeer Resort and marina. Very dense weed growth throughout the littoral region. *Potamogeton richardsonii* dominant.

Site 2. North-west corner, small boat launch and dock area. Dense aquatic weed growth including *Potamogeton zosteriformis*.

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* See Maps (Appendix 1) for site locations.

8. LAC LA NONNE (Figure 11) continued....

* Site 3. Resort, north-east corner, beach and boat launch area. Outflow stream located on north side of launch. Water very shallow, mud substrate, dense plant growth including _P. pectinatus_ and _Sagittaria_ sp.

Site 4. Boat launch and dock area at resort halfway along east shore. Many _M. exalbescens_ plants.

- Dense weed growth in almost all littoral areas.
- Algal bloom present at time of survey.

9. WABAMUN LAKE (Figure 12)

Date: September 9, 1982

Site 1. Wabamun Lake Provincial Park boat launch and dock area. Abundant growth of _M. exalbescens_, _Elodea canadensis_, _Lemna trisulca_, and _P. pectinatus_. Sand-silt substrate, many submergent species present, growth extending throughout littoral area.

Site 2. South-east shore, canal area at power generating plant. _Potamogeton natans_ abundant.

- Provincial park boat launch and Half Moon Bay can provide prime Eurasian water milfoil habitat.
- Seba Beach also warrants checking.

10. MIQUELON LAKE (Figure 13)

Date: September 8, 1982

Site 1. East shore, provincial park boat launch. _Ruppia_ sp. (tentatively identified) present throughout littoral area in scattered clumps. No apparent nuisance growth.

Site 2. South shore, provincial park boat launch. Water visibility very poor. No visible growth with exception of _Ruppia_ sp.

- Water very alkaline, very few aquatic plant species present. Only spot checks of boat launch areas are warranted.

11. WIZARD LAKE (Figure 14)

Date: September 14, 1982

Site 1. North-east shore, packed gravel boat launch at Jubilee Park. Only fragments were observed, including _M. exalbescens_. Very strong wind from the south-west prevented launching of boat.

* See Maps (Appendix 1) for site locations.

12. PIGEON LAKE (Figure 15)

Date: August 17, 1982

* Site 1. North shore, Mulhurst public boat launch. Launch is very small and steep. Water murky, sparse aquatic vegetation, included *M. exalbescens* and *P. richardsonii*. Most specimens were fragments.

Site 2. Ma-Me-O Beach, public beach and cement-lined wharf area. No visible plant growth. Water shallow and murky. Only fragments were noted including *M. exalbescens*. Large number of power boats and sail boats moored along shore.

Site 3. West shore, Pigeon Lake Provincial Park, boat launch and pier area. Water level above normal. Water visibility poor. Few rooted plants. Aquatic vegetation included: *M. exalbescens*, *P. richardsonii* and *Potamogeton gramineus*.

Site 4. North-west corner, Zeiner Park. Mainly fragments. No nuisance weed growth observed.

13. GULL LAKE (Figure 16)

Date: August 17, 1982

Site 1. North-west shore, Birch Bay boat launch and dock area. High water flood much of beach and launch area. Aquatic plant growth sparse. Mainly fragments including *P. pectinatus*.

Site 2. South end, Aspen Beach Provincial Park boat launch and swimming area. Water visibility poor, only fragments of plants observed (no *Myriophyllum* sp. observed).

14. BUFFALO LAKE (Figure 17)

Date: September 16, 1982

Site 1. South shore, Rochon Sands Provincial Park boat launch and marina area. Water very shallow, murky and weedy. *Potamogeton pectinatus* appears to be dominant, *P. vaginatus* also present. Sand-mud substrate.

Site 2. South shore, provincial park beach area west of boat launch. Water very shallow. No rooted plants observed, only fragments.

Site 3. East shore, public access and gravel boat launch. Sand-stone substrate. Few rooted plants but large mats of *P. pectinatus* and *P. vaginatus* fragments on shore.

- No *Myriophyllum* sp. was noted at any site.

* See Maps (Appendix 1) for site locations.

15. CRIMSON LAKE (Figure 18)

Date: August 18, 1982

* Site 1. South shore, provincial park main boat launch and dock area. Clear water, muddy silt substrate. Diverse aquatic plant growth. *M. exalbescens* and *Potamogeton pusillus* were most abundant; some of these specimens were surfacing and in flower. No nuisance weed growth observed.

Site 2. South shore, provincial park car-topper and canoe launch. Diverse but sparse aquatic plant growth including *M. exalbescens* and *Nuphar* sp. Sand-mud substrate. Shallow water.

16. TWIN LAKE (Figure 19)

Date: August 18, 1982

Site 1. East shore, park boat launch and dock area. Substrate is very soft with high organic content. Yellow Water Lily (*Nuphar variegatum* Engelm.) is abundant, other aquatic plant growth is sparse. Shallow water.

Site 2. North shore, small point. Growth is diverse but sparse. Aquatic vegetation included *Potamogeton praelongus*, *P. gramineus*, *P. natans*, *Polygonum natans* Eaton. and *M. exalbescens*. Water depth increases quickly.

Site 3. South shore, abundant weed growth in some shallows. *Hippuris vulgaris* dominant. Other species noted include *Utricularia vulgaris*, and *M. exalbescens*.

17. SYLVAN LAKE (Figure 20)

Date: August 18, 1982

Site 1. South shore, Sylvan Lake Provincial Park boat launch, pier and surrounding beach area. No rooted plant growth noted, only fragments. Fragments of *P. richardsonii*, *P. pectinatus*, *P. vaginatus* and *M. exalbescens*.

Site 2. South shore, Sylvan Lake Marina. Water very turbid due to boating activity. No rooted aquatic plants were noted.

Site 3. Rarely used boat launch on north-west shore. Rocky substrate. Only *P. richardsonii* was noted.
- This site has low potential for Eurasian water milfoil introduction.

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* See Maps (Appendix 1) for site locations.

17. SYLVAN LAKE (Figure 20) continued....

* Site 4. North end, Glen's Cove, boat launch and cottage area. Sand-gravel substrate. Very sparse aquatic plant growth. Species included *P. richardsonii*, *P. pectinatus*, *Typha latifolia*, *Lemna minor* and *M. exalbescens* (fragments only).

18. PINE LAKE (Figure 21)

Date: August 19, 1982

Site 1. North end, boat launch (gravel) and beach area. No rooted plant growth noted. Large mats of plant fragments along shore. Fragments included *M. exalbescens*, *Lemna trisulca*, *Elodea canadensis* and *Ceratophyllum demersum*.

Site 2. North end, Leisure Campground resort, boat dock and beach area. Water visibility very poor due to boating activity. A bed of *P. pectinatus* just west of dock. Sand-silt substrate.

Site 3. West shore, Sandy Cove Resort boat launch and dock area. Large number of *M. exalbescens* plants growing around dock area. Other species noted were *P. pectinatus* and *C. demersum*. Water visibility is very poor.

19. CHESTERMERE LAKE (Figure 22)

Date: August 10, 1982

Site 1. North end, boat launch and wharf area. Dense weed growth throughout almost entire area north of causeway. *Potamogeton richardsonii* dominant and *Ceratophyllum demersum* also abundant. Only three specimens of *M. exalbescens* noted. Boating is very difficult due to dense weed growth.

Site 2. East shore, just south of causeway. Boat launch and dock are in disrepair. Dense stands of *P. richardsonii*. *Ceratophyllum demersum* and *Lemna trisulca* also abundant.

Site 3. West shore, private boat docks approximately 1 km north of south end. *Potamogeton richardsonii* abundant. *P. pectinatus*, *P. gramineus* and *Sagittaria* sp. also present.

- Lake is almost 100% littoral (weeds therefore widespread).
- Calgary Yacht Club area merits observation.

* See Maps (Appendix 1) for site locations.

20. KANANASKIS LAKES (Figure 23)

Date: September 15, 1982

* Site 1. Lower lake, north-east end, dirt-gravel boat launch. Only *Equisetum palustre* was found (a few scattered plants in very shallow areas). Rock and silt substrate. Water drops off quickly. Water levels fluctuate as much as 15 metres.

Site 2. Upper lake, north-east corner. No aquatic plants observed.

Site 3. Upper lake, south-east corner, cement boat launch. Stone-gravel substrate inshore, silt further out. Only a few *E. palustre* plants observed at water's edge. Water is very clear.

- Although neither lake is susceptible to a serious weed infestation, these lakes could serve as initial introduction sites of Eurasian water milfoil into Alberta.

21. MCGREGOR RESERVOIR (Figure 24)

Date: August 7, 1982

Site 1. North and south shore of causeway (highway #531 crossing). *Ranunculus circinatus* is dominant, mostly surfacing and in flower. Weeds were found only in inshore areas, in narrow bands. Other aquatic plant species present include *Potamogeton richardsonii*, *P. pectinatus*, *P. zosteriformis*, *Ceratophyllum demersum*, *Elodea canadensis*, and *M. exalbescens*.

- North end of reservoir (Milo Memorial Park) warrants observation.

22. LAKE NEWELL RESERVOIR (Figure 25)

Date: August 11, 1982

Site 1. Boat launch on west side of Kinbrook Is. Provincial Park. *Elodea canadensis* is dominant. Dense weed growth throughout most of the bay area. Other aquatic plant species present include *Ranunculus* sp., *P. gramineus*, *P. zosteriformis*, *P. richardsonii*, *C. demersum* and *M. exalbescens*.

Site 2. Shallow bay and marsh area on east side of island. Large expanse of *Polygonum amphibium* (in flower) on shore. Dense weed growth throughout the bay area, *Ceratophyllum demersum* most abundant. *Ranunculus* sp. becomes dominant further off shore. Other abundant species include *Elodea canadensis* and *M. exalbescens*. Important waterfowl area.

- Water level below normal summer level.

* See Maps (Appendix 1) for site locations.

23. CHAIN LAKE RESERVOIR (Figure 26)

Date: August 3, 1982

* Site 1. South-east end of reservoir, north of provincial park boat launch and dock. Scattered aquatic plant growth, no large weed beds. *Potamogeton richardsonii*, *P. pectinatus* and *Ranunculus circinatus*.

Site 2. South side of provincial park boat launch and dock. *Potamogeton richardsonii*, *P. pectinatus* and *Ceratophyllum demersum* were present.

Site 3. South end, sheltered inlet at the outflow channel. Sparse growth (*Potamogeton richardsonii*, *P. pectinatus* and *Chara* sp.).

Site 4. Large bay at south-west end of the lake. Extensive weed growth throughout most of the bay area. Large dense beds of *P. richardsonii*, *P. pectinatus*, and *P. natans*. Many plants were found surfacing making boat navigation difficult. Other aquatic plant species include *Utricularia vulgaris*, *Hippuris vulgaris*, *Callitriche* sp. and *M. exalbescens*.

Site 5. West shore, just north of small point. *Potamogeton richardsonii* and *P. pectinatus* were observed.

24. TRAVERS RESERVOIR (Figure 27)

Date: August 6, 1982

Site 1. East shore, bay just west of the dam structure. Sand-gravel shoreline. Sparse aquatic vegetation, included *P. richardsonii*, *P. pectinatus* and *Alisma gramineum*.
- The usefulness of surveying this site is questionable.

Site 2. Outflow channel on north end of the dam structure. Water is very clear and deep. *Ranunculus circinatus*, *P. richardsonii*, *P. pectinatus* found in back waters.

Site 3. North shore, east end, Government campsite and boat launch (cement). Shore gravel and rocks. No aquatic plant growth were observed.

Site 4. West end of lake, Little Bow Provincial Park, boat launch and dock. Dense weed growth inshore of outer dock area. *Potamogeton richardsonii* was dominant. Other species present were *C. demersum*, *P. pectinatus*, *P. zosteriformis*, *R. circinatus* and *M. exalbescens*.
- This site deserves close attention.

* See Maps (Appendix 1) for site locations.

25. KEHO LAKE (Figure 28)

Date: August 6, 1982

* Site 1. East end of the lake, south of the canal. Shore of large boulders. Floating and beached fragments of Potamogeton pectinatus, P. richardsonii, Zannichellia palustris and Myriophyllum exalbescens. Large bed of healthy, mature P. richardsonii south of site, many surfacing and flowering.

Site 2. East end of the lake, mouth of the outlet canal. Very dense weed beds down both sides of canal (central portion of channel open). P. richardsonii dominant (many flowering and surfacing), P. pectinatus and Alisma gramineum also abundant. Water was murky, and flow was slightly restricted.

Site 3. Short distance down the canal just above the control structure. Weeds extending down both sides of shoreline, centre of channel open. P. richardsonii dominant, with P. praelongus, M. exalbescens, P. pectinatus and Chara sp. also present. Sagittaria cuneata along shore.

Site 4. Along north shore, in shallows frequented by waterfowl. Irrigation water intake pump at east end of site. Species present included P. richardsonii, P. pectinatus, Ranunculus sp. (which was flowering), Sagittaria sp., Juncus sp., and Equisetum sp. Very muddy substrate.

Site 5. North-west corner of the lake, inlet canal. P. richardsonii, Sagittaria sp., and Juncus sp.

Site 6. South-east shore at the boat launch in Keho Park. Boat launch made of cement slabs but in poor condition (covered by rocks, sand and mud). Shoreline is very rocky (have been brought in to stabilize shore area). P. richardsonii and P. pectinatus fragments on shore, but no rooted plants were found growing around launch area.

26. PARK LAKE (Figure 29)

Date: August 5, 1982

Site 1. North end of the lake, boat launch and dock. Greatest species diversity at this site with P. richardsonii (many of which were surfacing and flowering) being the dominant species. Boat launch area quite clean, most plants were on north side of dock, such as P. pectinatus, Najas flexilis, P. zosteriformis, P. richardsonii, M. exalbescens, Typha sp. and Scirpus sp. Plants were in good condition although the lower portions were covered with algae and periphyton. Substrate of organic muck.

* See Maps (Appendix 1) for site locations.

26. PARK LAKE (Figure 29) continued....

* Site 2. North end of lake, east shore, public swimming area roped off, pier (not used for boat docking). Beach area was very clean, but outside the roped area were large beds of _P. richardsonii_ (many surfacing and flowering).

Site 3. Rocky point extending out into the lake at the south end of the beach area. _P. richardsonii_ dominant. Also present were _P. pectinatus_, _Alisma gramineum_, _Scirpus_ sp., _Typha_ sp., and _Juncus_ sp.

- Weeds were present throughout littoral regions.

27. CHIN LAKES RESERVOIR (Figure 30)

Date: August 5, 1982

Site 1. North shore, west of the bridge. Long beds of _P. pectinatus_ parallel to shore in the shallows, long beds of _P. richardsonii_ in deeper water. Beds appeared to extend several hundred metres along the shore both east and west of the bridge. Plants were mature and surfacing. Some _Elodea canadensis_ and _Alisma gramineum_ also present. Substrate of sand and mud.

Site 2. South shore, west of the bridge at government (Alberta Transport) campsite. Large bed of _P. pectinatus_ in the bay area west of site, only a few weeds east of site. Plants were mature and surfacing. Other plants included _Ranunculus_ sp., _A. gramineum_ and _P. richardsonii_. Substrate of sand and mud.

Site 3. South shore, east of the bridge at the boat launch. Boat ramp (cement) was entirely above the water level, shoreline consisted of very coarse gravel and rocks. No weeds were present at the launch site, but were surfacing toward the bridge. _P. pectinatus_ and _P. richardsonii_ were dominant.

- Condition of aquatic plants was generally good, but many had a heavy covering of periphyton and fine sedimentation.

28. ELKWATER LAKE (Figure 31)

Date: August 12, 1982

Site 1. Stony-gravel boat launch east of the provincial park beach. Appears to get little use. With exception of nearby beds of _Scirpus_ sp., area weed-free.

* See Maps (Appendix 1) for site locations.

28. ELKWATER LAKE (Figure 31) continued....

* Site 2. South shore, provincial park boat launch and docks. The dock area is large and well maintained; launch area is clean and weed free. Many weeds in boat dock area including *P. richardsonii* (dominant), *P. friesii*, *P. pectinatus*, *C. demersum* and *M. exalbescens*.

Site 3. South shore, canoe launch and day use area west of site 2. Murky water. A number of small weed beds about 4 m off shore. Species present included *P. richardsonii*, *P. pectinatus*, *Sagittaria* sp., and *M. exalbescens*.

- Numerous and large beds of *Typha latifolia* and *Scirpus* sp. along south perimeter of lake.

29. SPRUCE COULEE RESERVOIR (Figure 32)

Date: August 12, 1982

Site 1. North-west corner of the lake, at west end of the dam. Day use and tenting area at the north-west corner but no boat launch. (No power boats allowed). Dominant species was *Ranunculus circinatus*. Other aquatic macrophytes, including *Myriophyllum exalbescens*, were also observed. Some *R. circinatus* was surfacing and in flower. Plants were healthy but covered with periphyton. Muddy substrate with many small rocks in the shoal areas.

30. REESOR LAKE RESERVOIR (Figure 33)

Date: August 12, 1982

Site 1. North shore, day use and pier area. Scattered weed beds of *Potamogeton pectinatus* and *Ceratophyllum demersum*. Some *Myriophyllum exalbescens* also present. Plants in good condition. Substrate of organic muck.

Site 2. South end of the lake, at west end of the dam. Boat launch facilities. Weed beds of *P. pectinatus* and *C. demersum*. *M. exalbescens* also was present. Most species of aquatic macrophytes in the lake were observed at this site. The plants appeared to be in good condition. Substrate was organic muck.

- There were scattered weed beds throughout the littoral areas of the lake.

31. BEAUVAIS LAKE (Figure 34)

Date: August 4, 1982

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* See Maps (Appendix 1) for site locations.

31. BEAUVAIS LAKE (Figure 34) continued....

* Site 1. North-west end of the lake, at the boat launch. Many private cottages along north shore; shore is lined with wharfs (east to beach area). Dense weed beds dominated by _Potamogeton pectinatus_ (some flowering), as well as _Myriophyllum exalbescens_. Some weeds were surfacing. Heavy growth occurred all along north shore. Abundant filamentous green algae and periphyton on the lower portions of plants.

Site 2. Centre of the north shore at the beach area and playground. Dense band of weeds (about 4 m wide) along the shore at an average of 2.5 m from shore. _M. exalbescens_ dominant. The plants were in good condition but none were flowering. The bay east of the site was also heavily infested with _M. exalbescens_. Substrate of mud and organic muck.

- Fewer weeds on south shore, where water depth drops off faster. No cottages present on south shore.

32. WATERTON RESERVOIR (Figure 35)

Date: August 4, 1982

Site 1. North-west tip of reservoir. Dirt-mud boat launch, picnic tables and shelter for day use only, small dock for boat mooring adjacent to launching area. Because of considerable fluctuation in water levels, weed growth was limited. No major weed beds were observed, although _Scirpus_ sp. was present. Substrate near shore was coarse gravel and sand, while it was muck in deeper areas off shore.

- This reservoir warrants only spot checks.

33. ST. MARY RESERVOIR (Figure 36)

Date: August 5, 1982

Site 1. North-east end of reservoir, Cardston Boat Club pier (private). Main recreational area (waterskiing quite popular). Very little weed growth, very clean.

Site 2. North-east end of reservoir, south shore at private boat club pier. Very sparse plant growth and diversity. _Equisetum fluviatile_ along shore (sparse), some _Potamogeton richardsonii_ fragments floating near the dock, one rooted specimen each of _P. pectinatus_ and _P. berchtoldii_. Muddy substrate.

Site 3. North-east end of reservoir, north shore at the public boat launch. No mooring site. No aquatic weeds observed. Gravel substrate.

* See Maps (Appendix 1) for site locations.

33. ST. MARY RESERVOIR (Figure 36) continued....

Site 4. Pond below the dam and drainage canal into St. Mary River. Popular fishing spot. Pond shallow with sluggish water. Aquatic macrophytes present in pond included *Potamogeton richardsonii* (dominant and some flowering), *P. pectinatus* and *Myriophyllum exalbescens*. *P. pectinatus*, *P. richardsonii* and *Juncus* sp. were observed in the drainage canal.

- There were no major weed beds at any of the sites surveyed. (Possibly due to considerable seasonal fluctuation of water levels).

34. POLICE (OUTPOST) LAKE (Figure 37)

Date: August 4, 1982

* Site 1. South end, boat launch and dock. Dense weed growth in all littoral regions included *P. pectinatus*, *Polygonum natans*, *Chara* sp., *Scirpus* sp., and *M. exalbescens*, the latter being the dominant species, although beneath the surface in its early growth stage. Substrate was organic muck.

Site 2. East end of the island. Moderate infestation, greatest species diversity of all sites surveyed, with *P. vaginatus* and *P. pectinatus* being the dominant species. There also was an abundance of *P. zosteriformis*, *P. richardsonii*, *Chara* sp., *M. exalbescens*, *Scirpus* sp. and *Polygonum natans*. Some *P. richardsonii* and *Polygonum natans* were surfacing and flowering. Substrate was muddy.

Site 3. North side of the island. Littoral area was heavily infested. Species included *P. vaginatus*, *P. richardsonii*, *Scirpus* sp. and *M. exalbescens* (which was dominant). Most plants had not reached maturity, and therefore few were surfacing or flowering. *Polygonum natans* was found toward the north shore. Leaves of most plants suffered considerable grazing damage (probably inflicted by insects).

Site 4. North end, near a small cove. Light weed infestation including *M. exalbescens* (dominant), *P. vaginatus*, and *Scirpus* sp. *M. exalbescens* plants were about 20 cm beneath the water's surface, with very stiff leaves and some with red stems. *Potamogeton richardsonii* was observed close to shore. Shoreline was rocky, with large round stones extending to a water depth of one metre and then mud.

- The island is a very popular fishing site and is linked to the mainland by a foot bridge. Most of the lower and older plant growth was covered with thick filamentous algae.

* See Maps (Appendix 1) for site locations.

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APPENDIX I

Maps of Lakes and Reservoirs Surveyed for
Eurasian Water Milfoil During 1982.

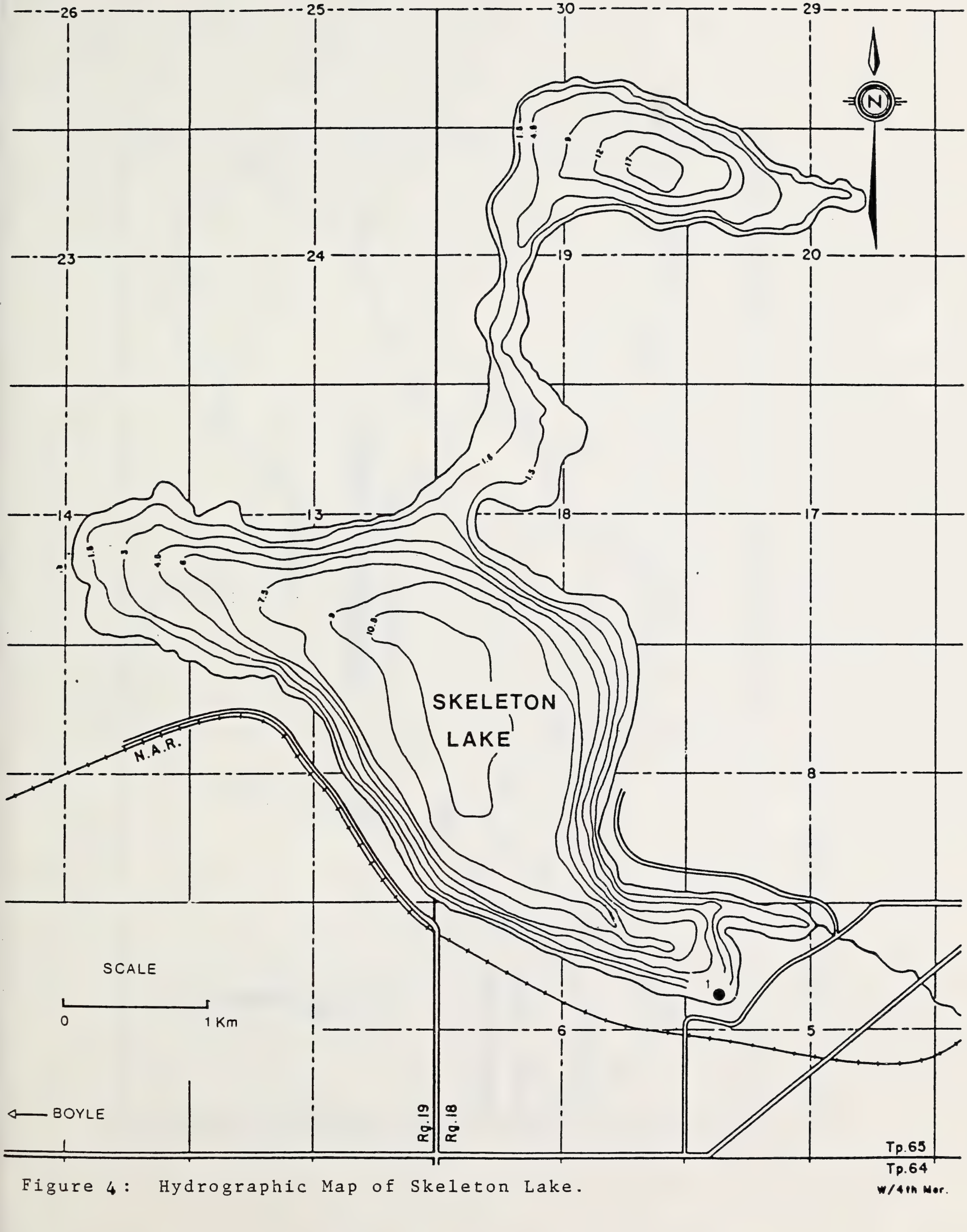

Figure 4: Hydrographic Map of Skeleton Lake.

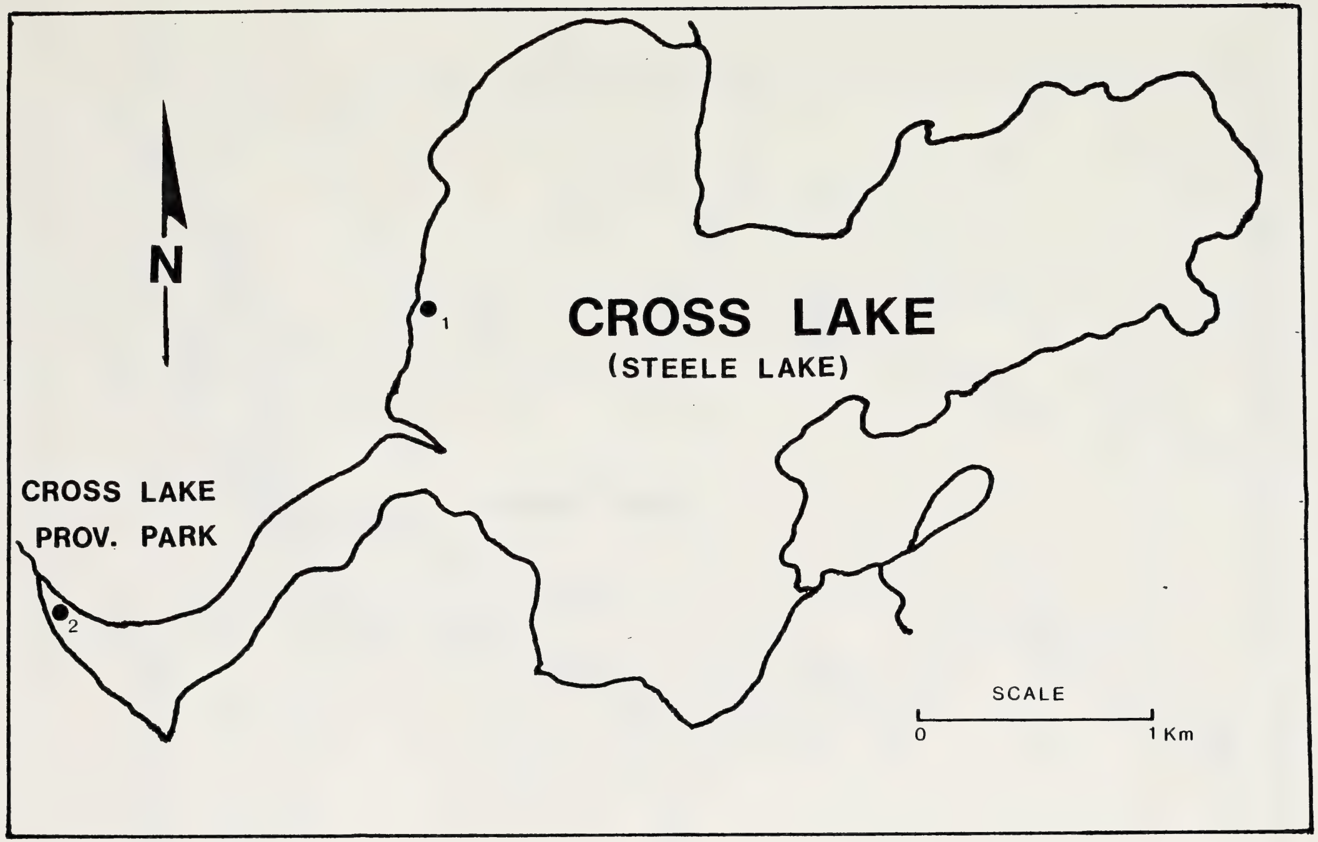

Figure 5: Cross (Steele) Lake.

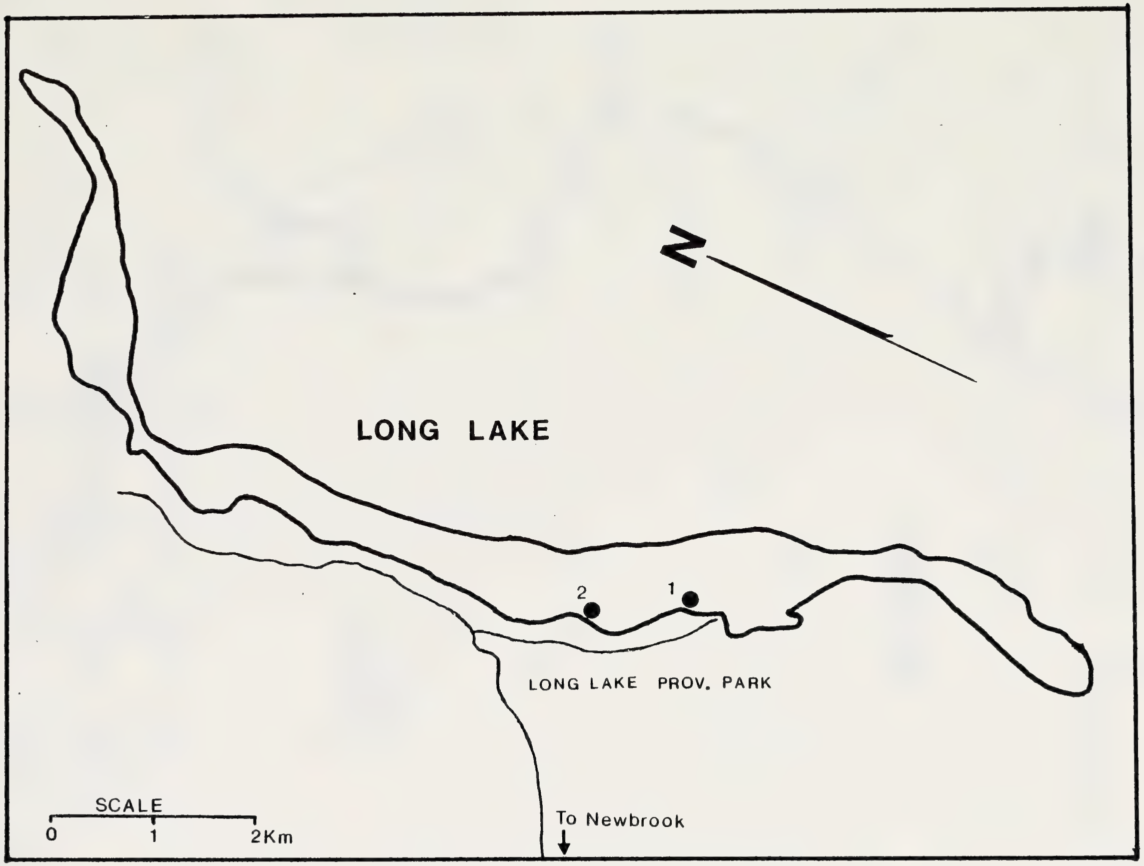

Figure 6: Long Lake.

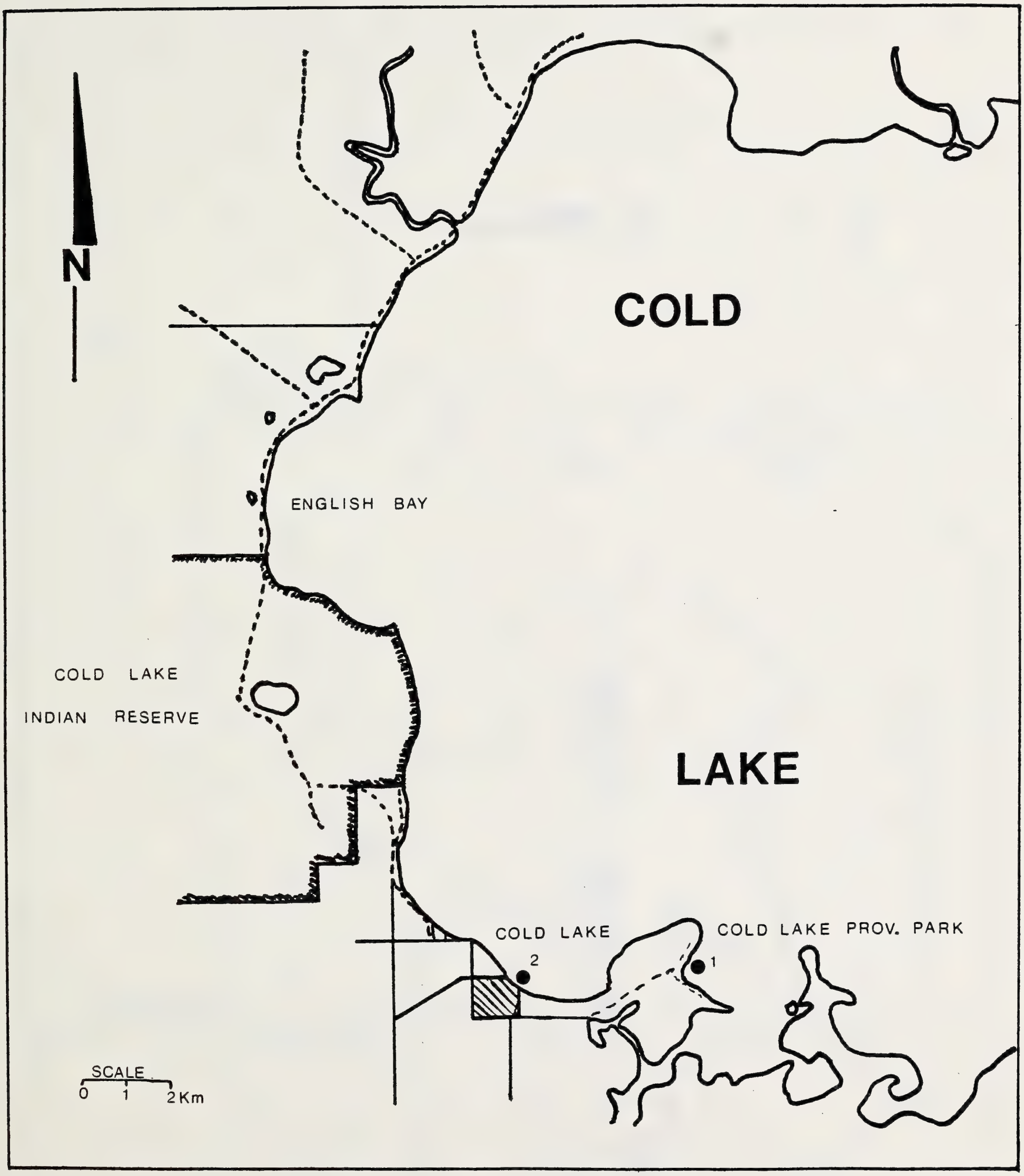

Figure 7: Cold Lake (Alberta portion).

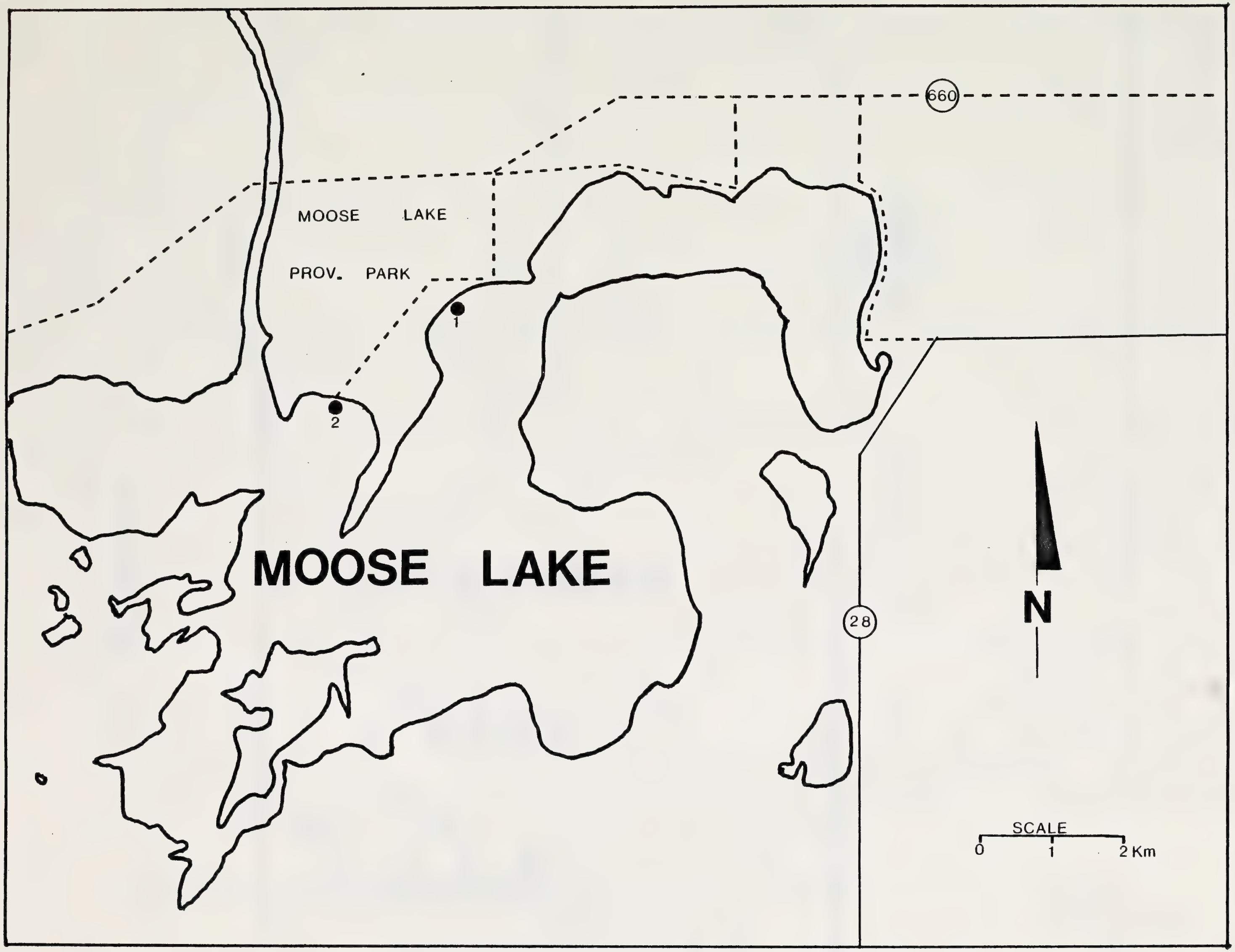

Figure 8: Moose Lake.

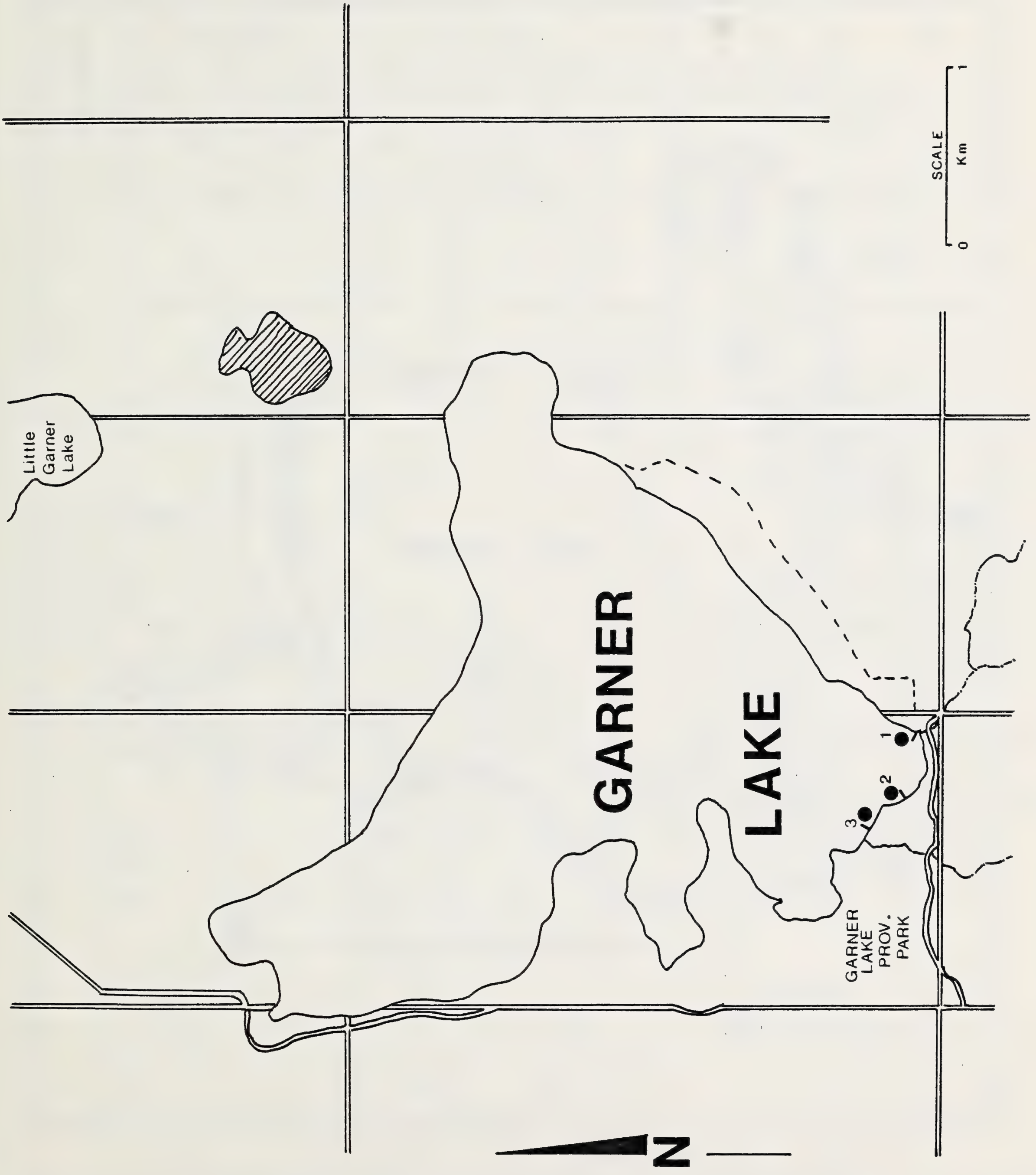

Figure 9: Garner Lake.

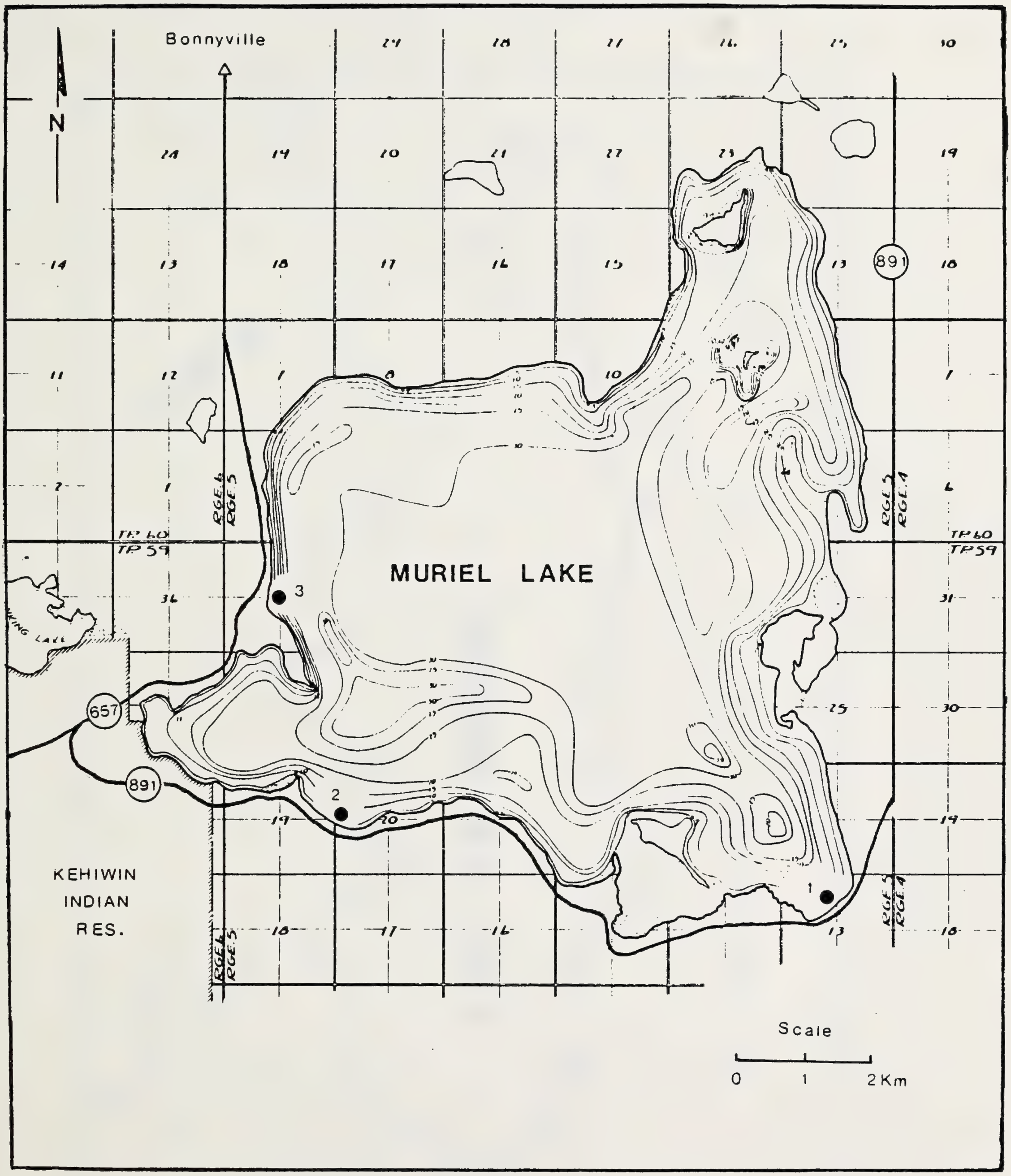

Figure 10: Hydrographic Map of Muriel Lake (Contour intervals in feet).

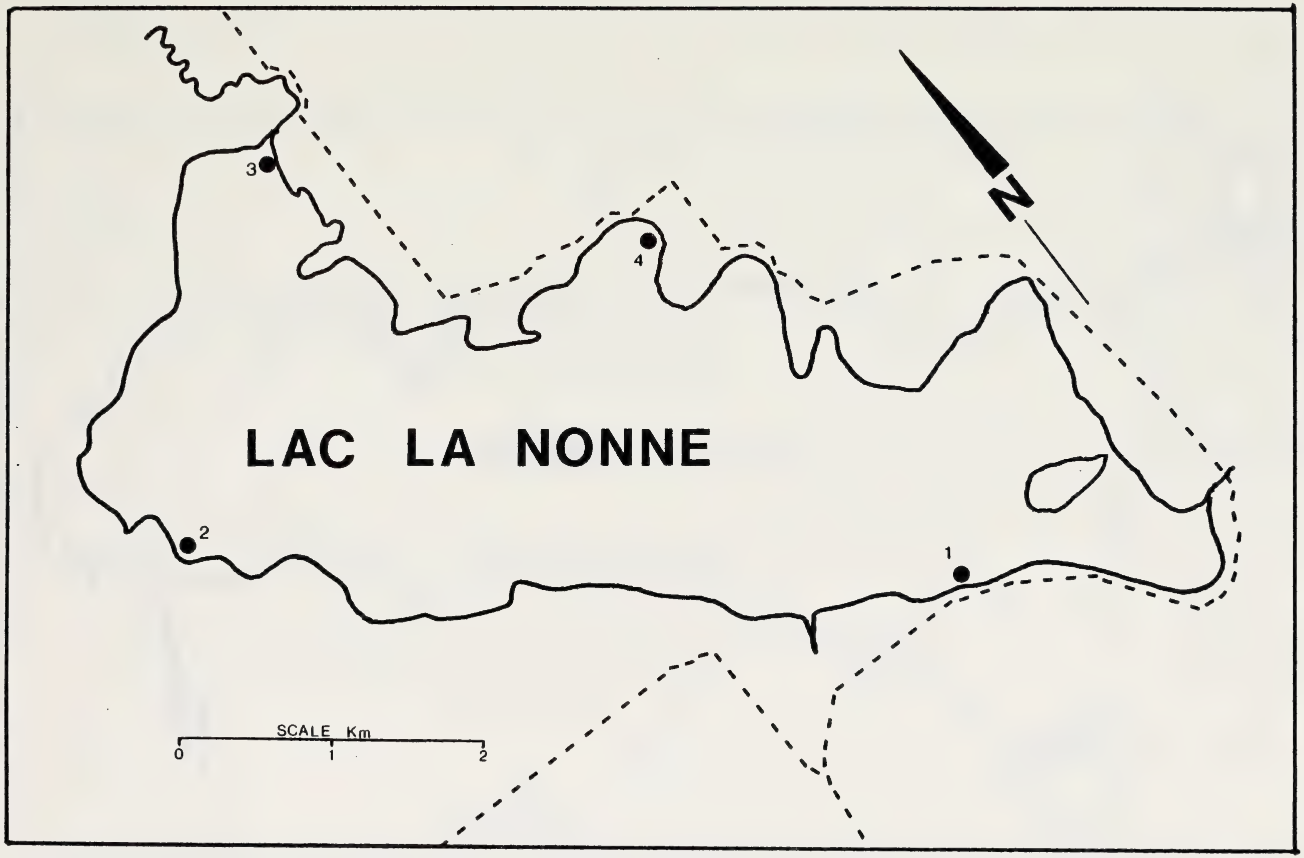

Figure 11: Lac la Nonne.

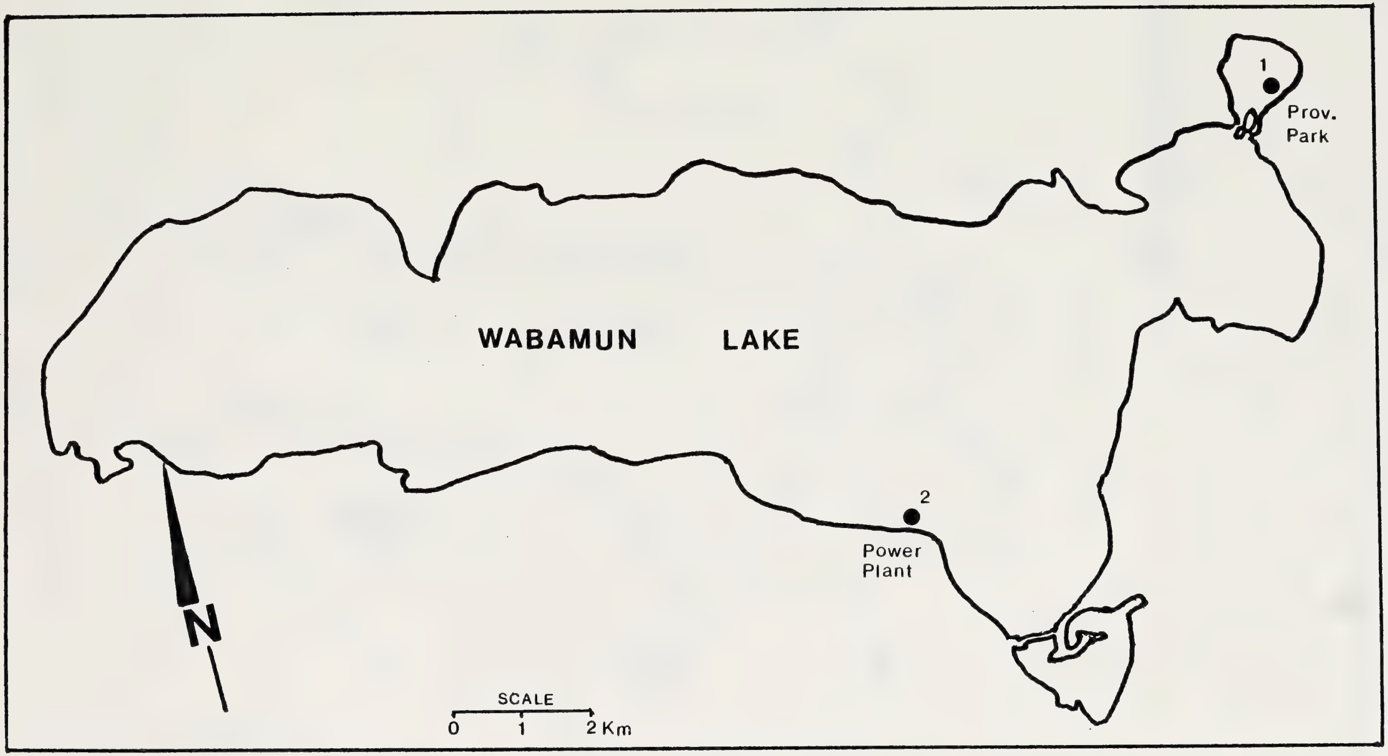

Figure 12: Wabamun Lake.

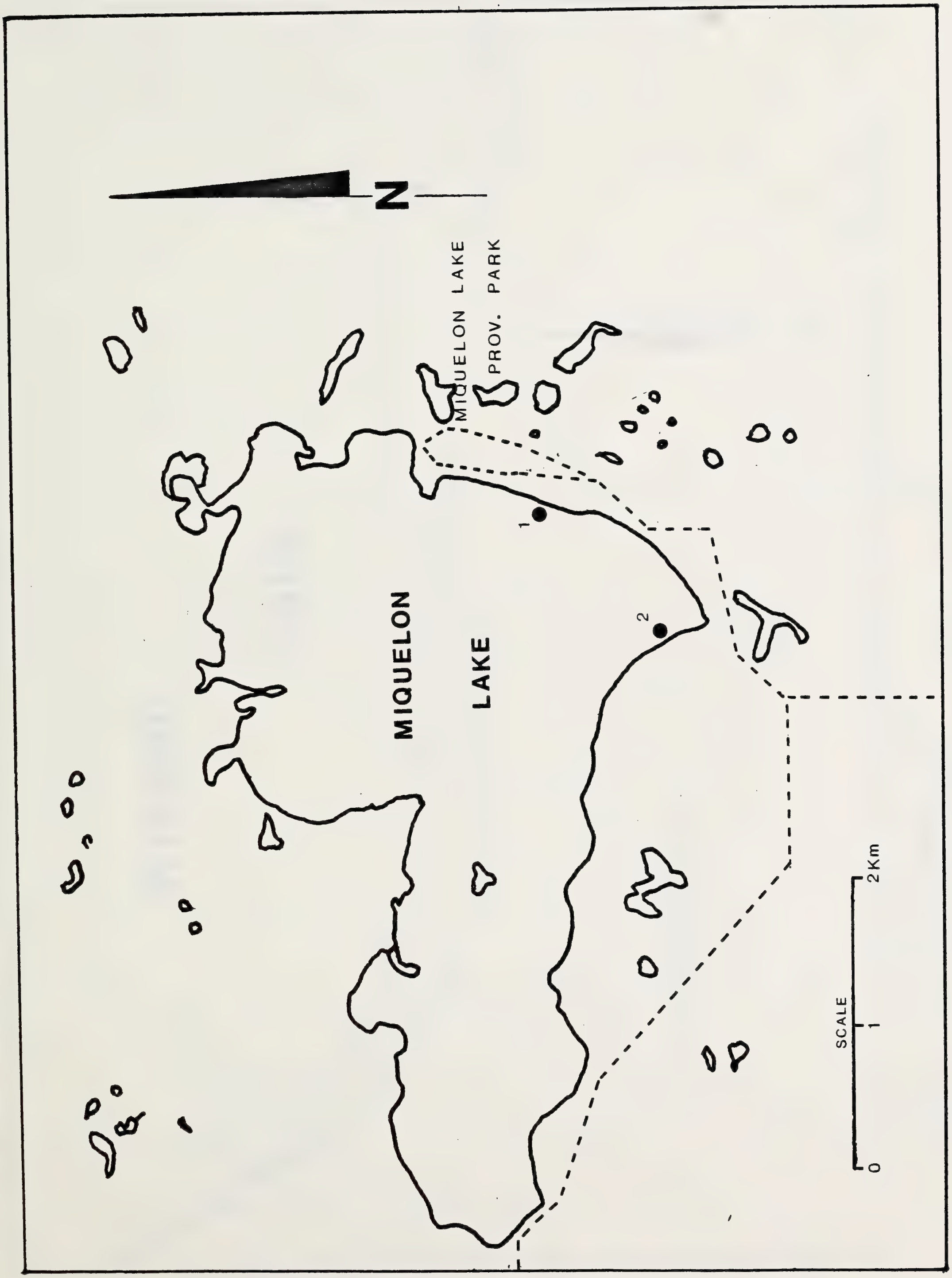

Figure 13: Miquelon Lake.

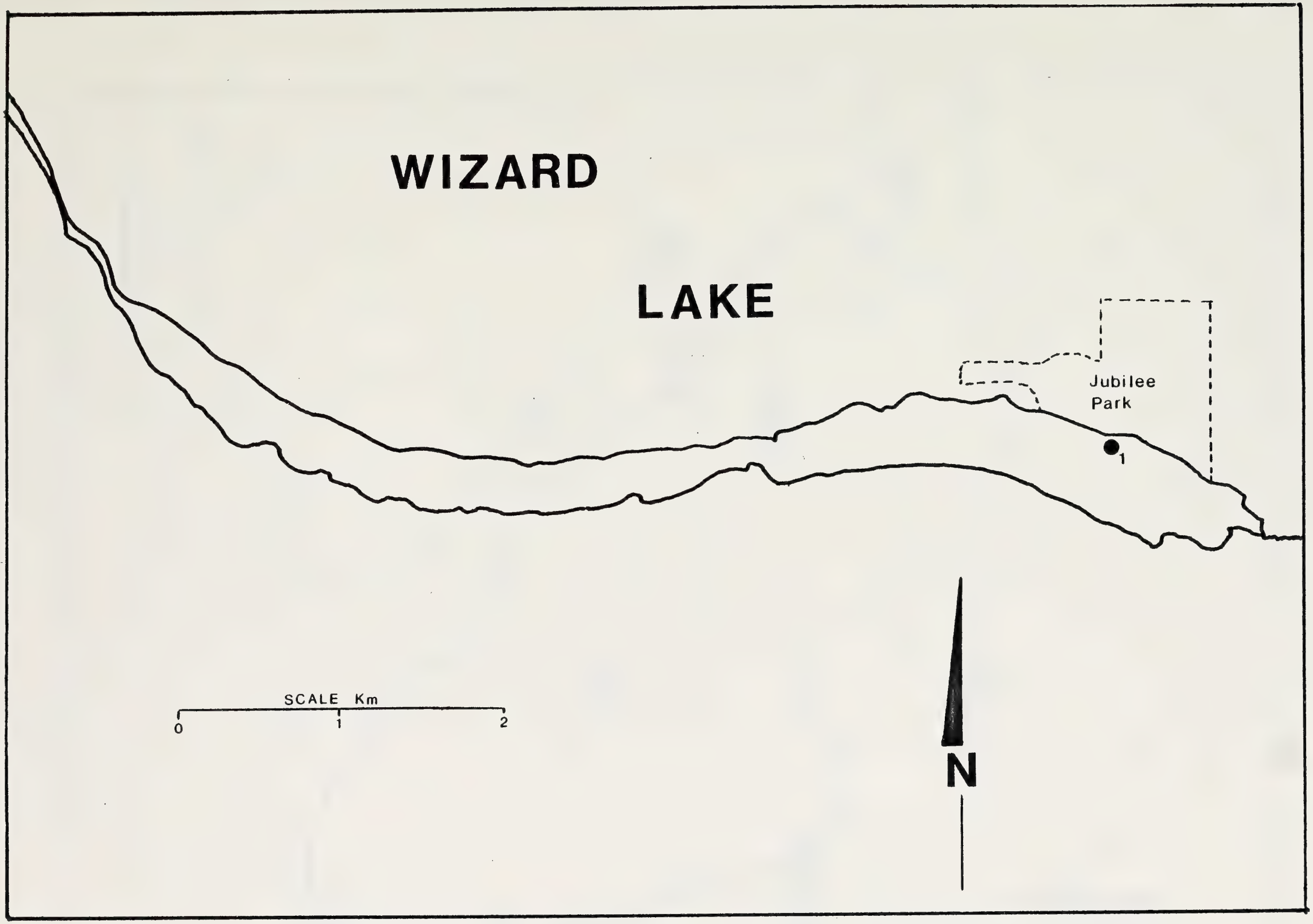

Figure 14: Wizard Lake.

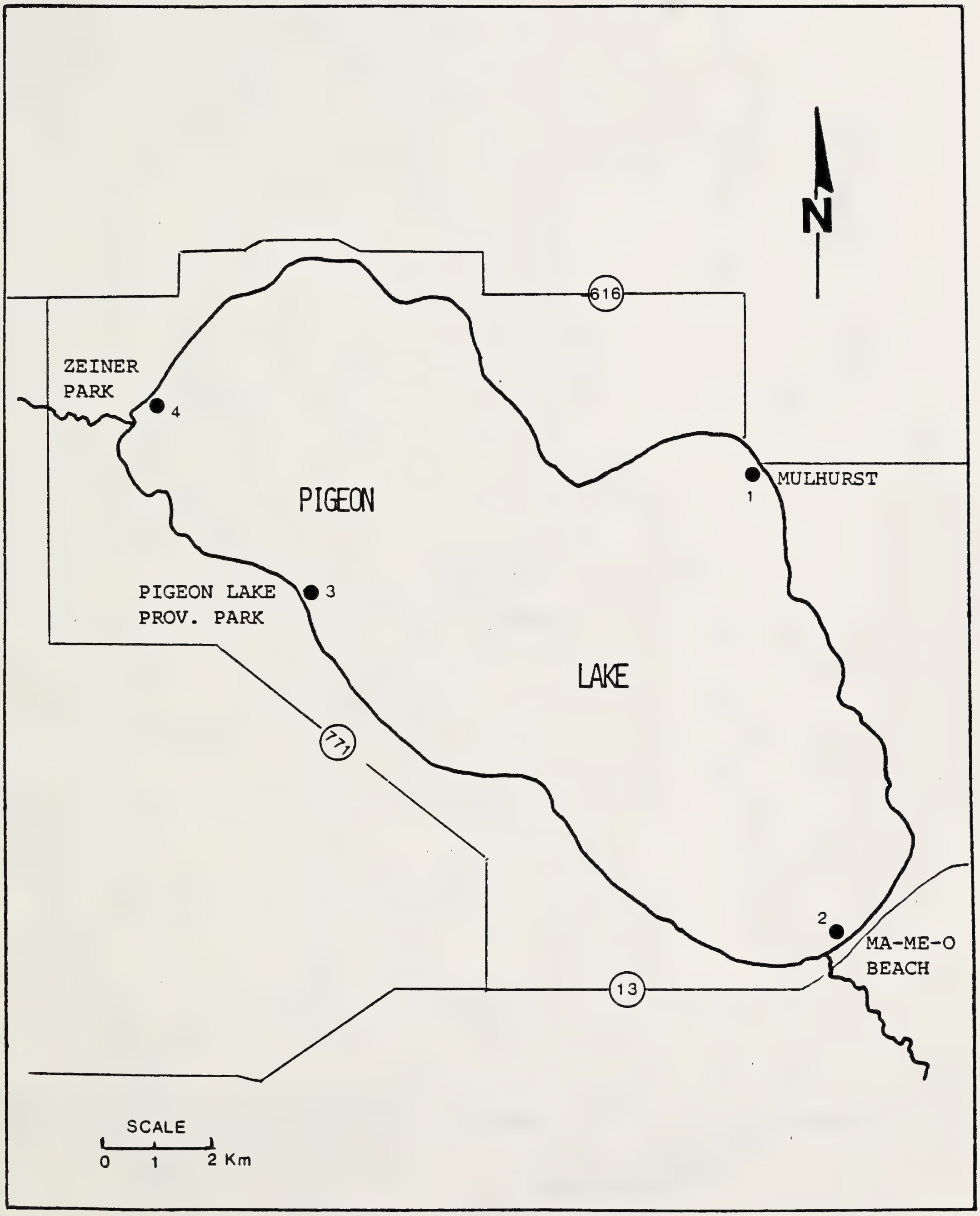

Figure 15: Pigeon Lake.

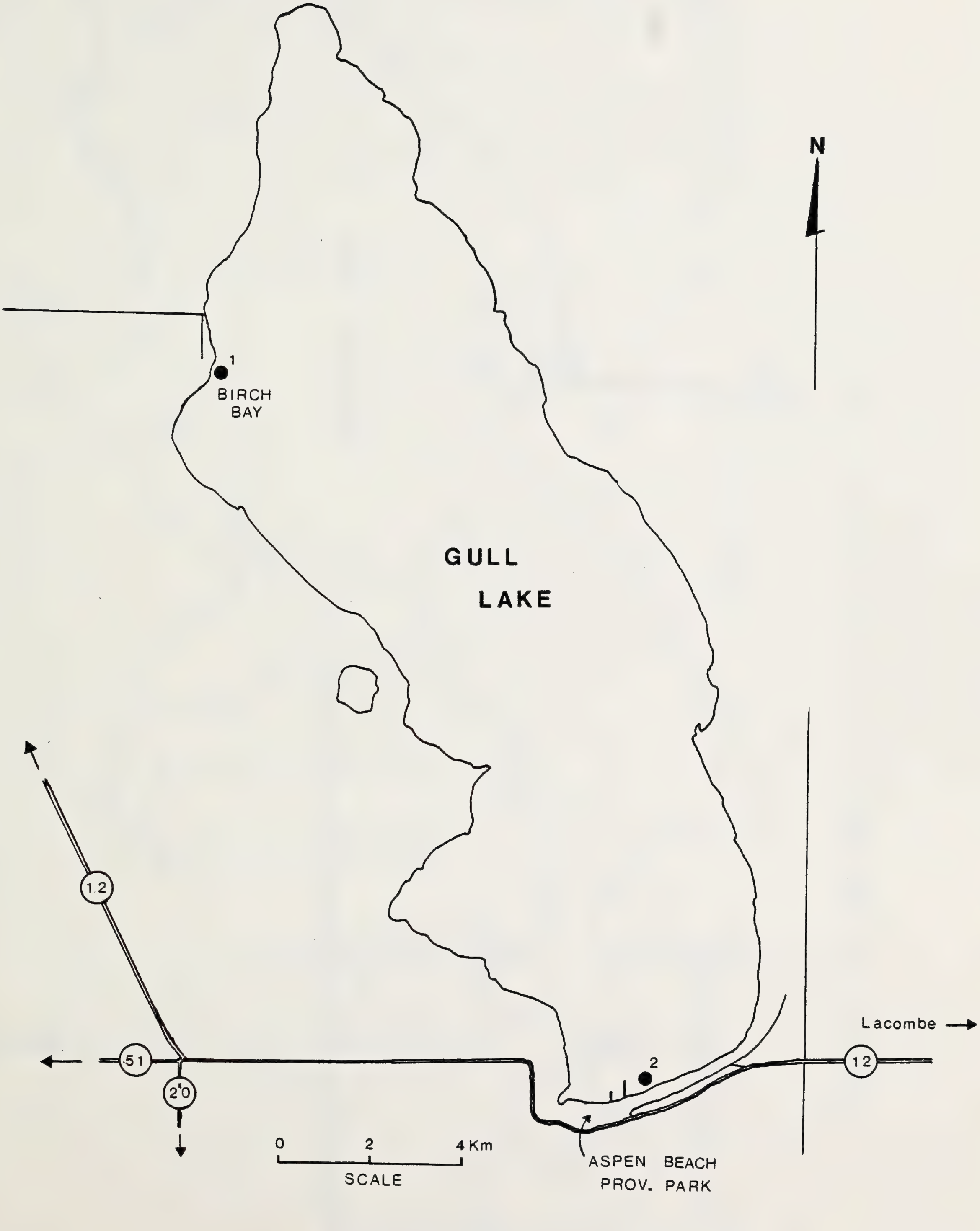

Figure 16: Gull Lake.

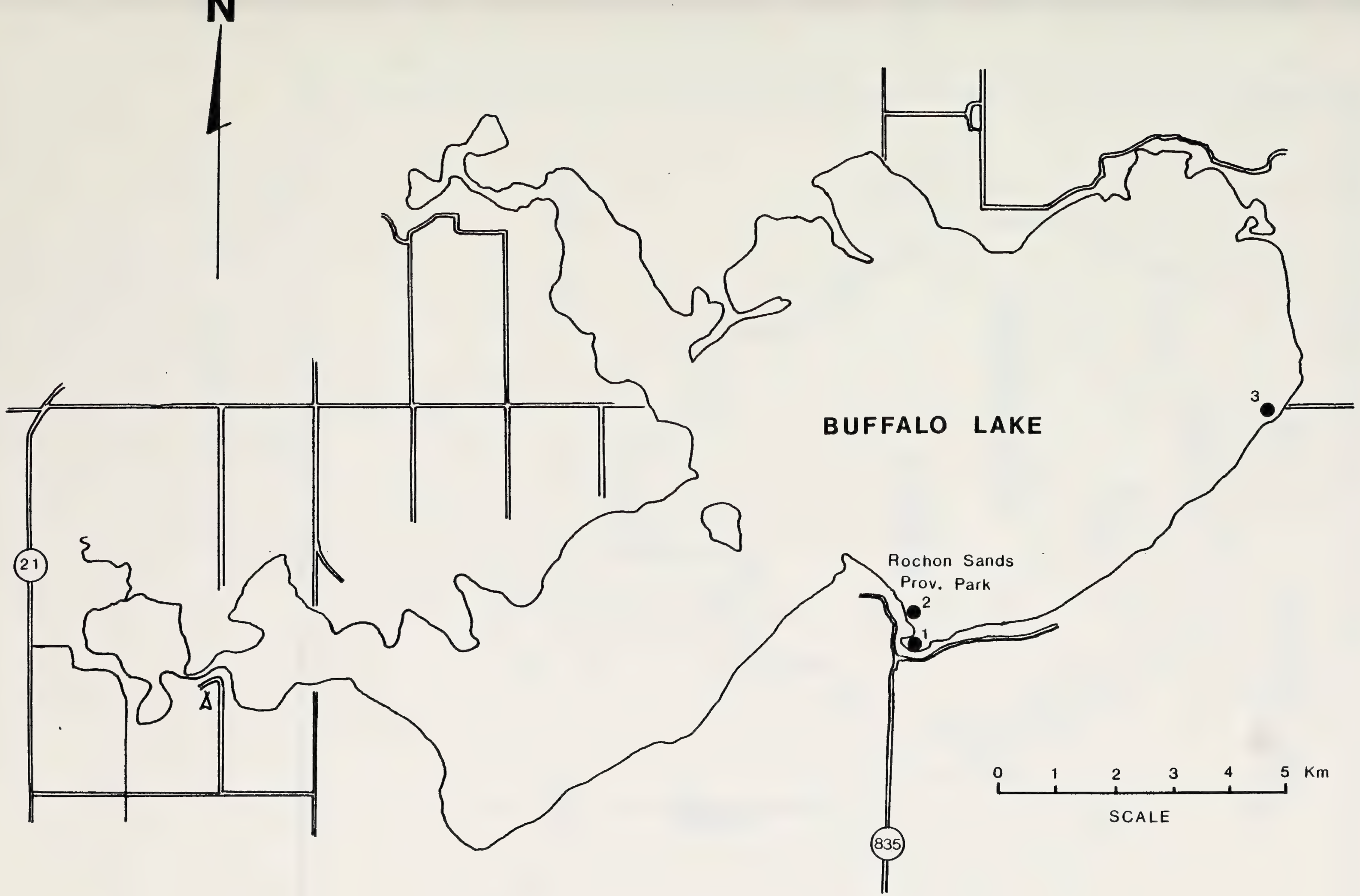

Figure 17: Buffalo Lake.

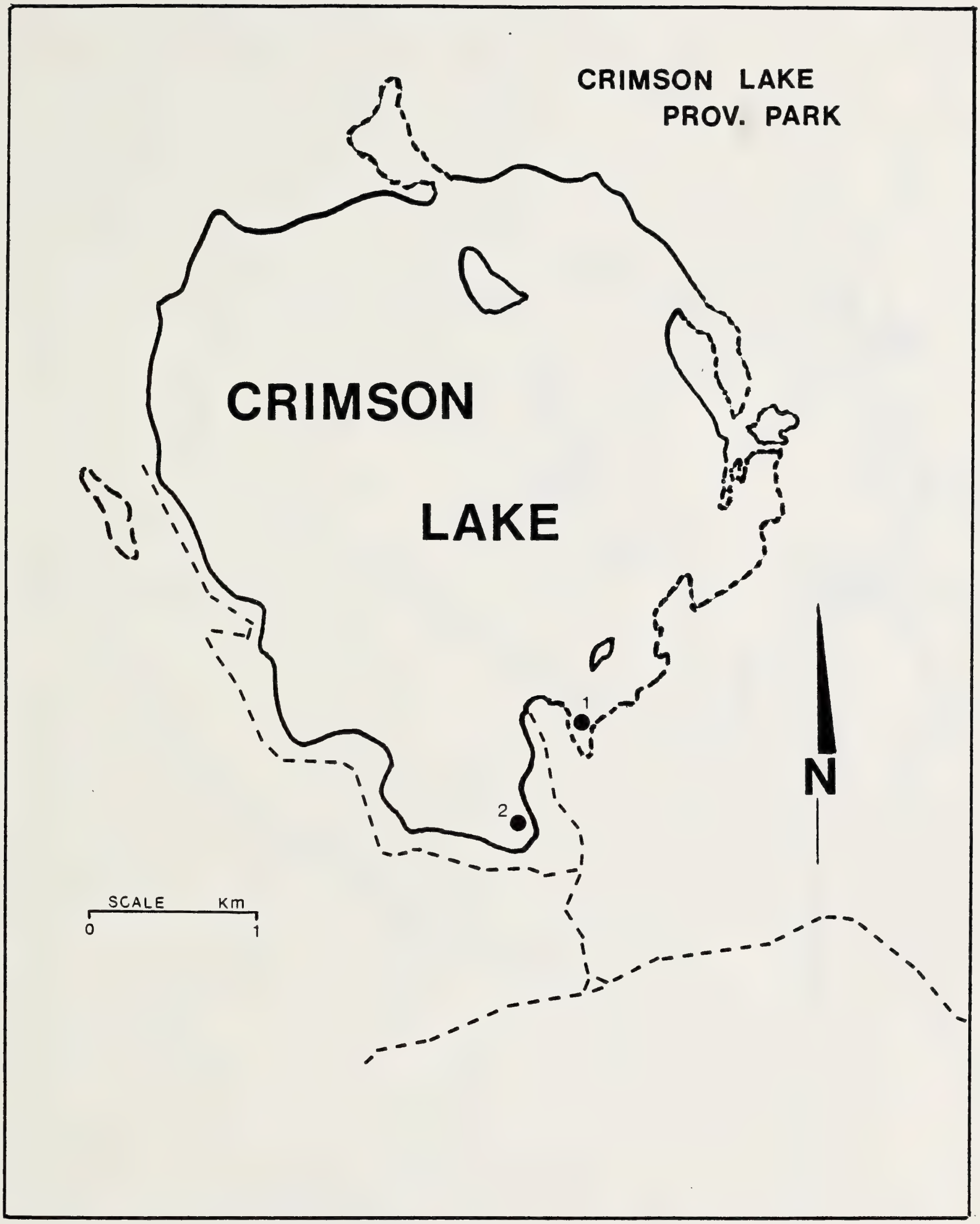

Figure 18: Crimson Lake.

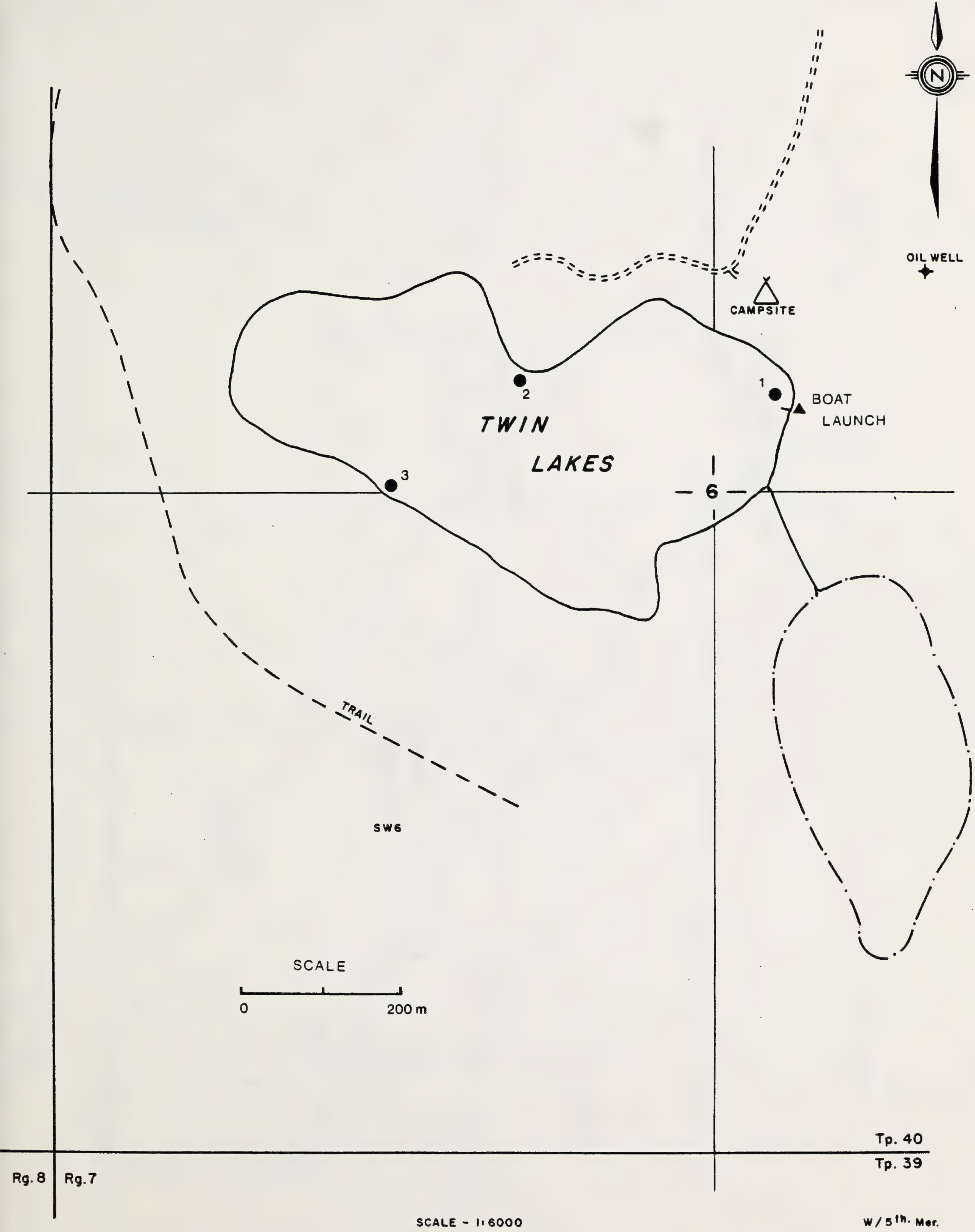

Figure 19: Twin Lakes

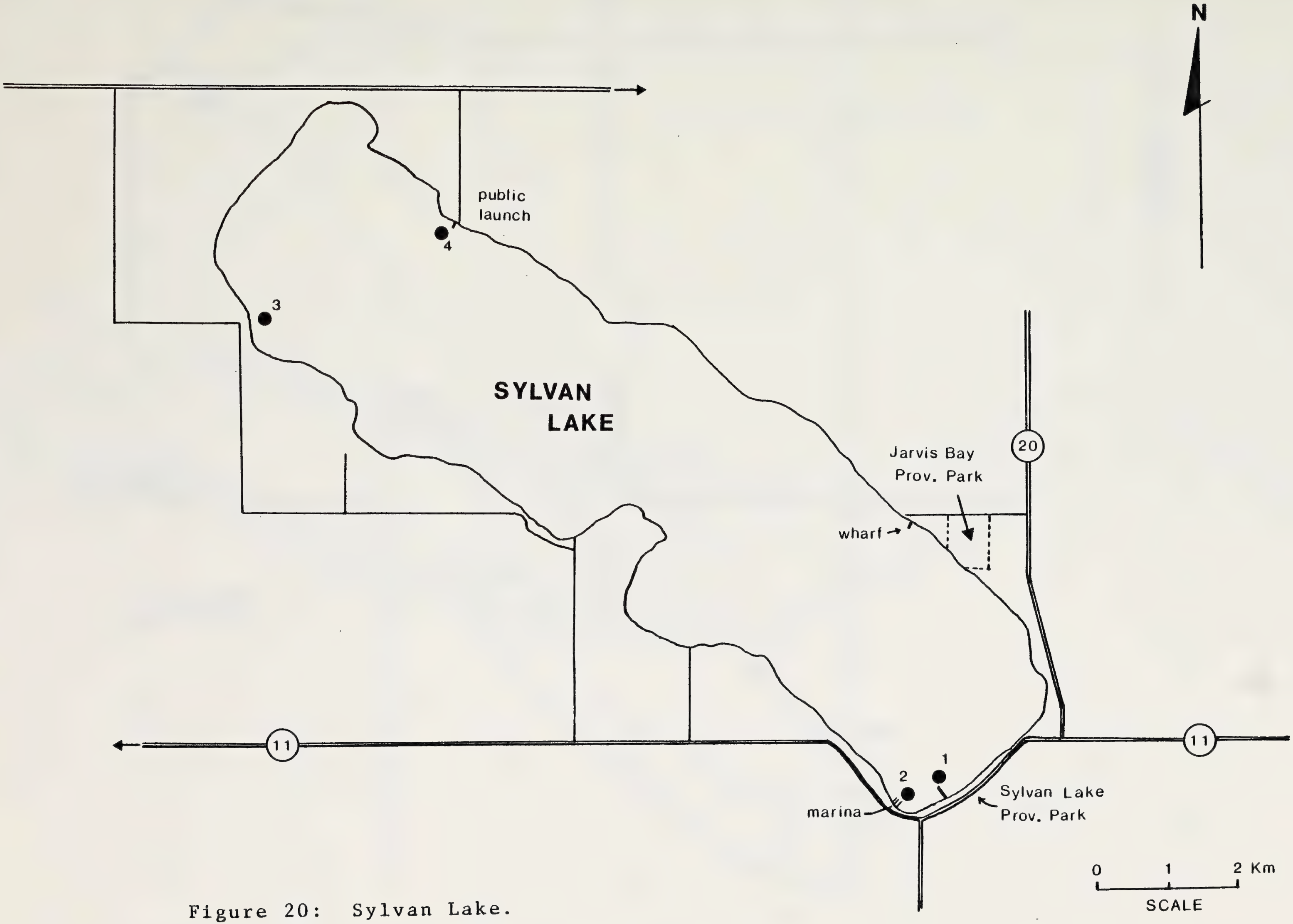

Figure 20: Sylvan Lake.

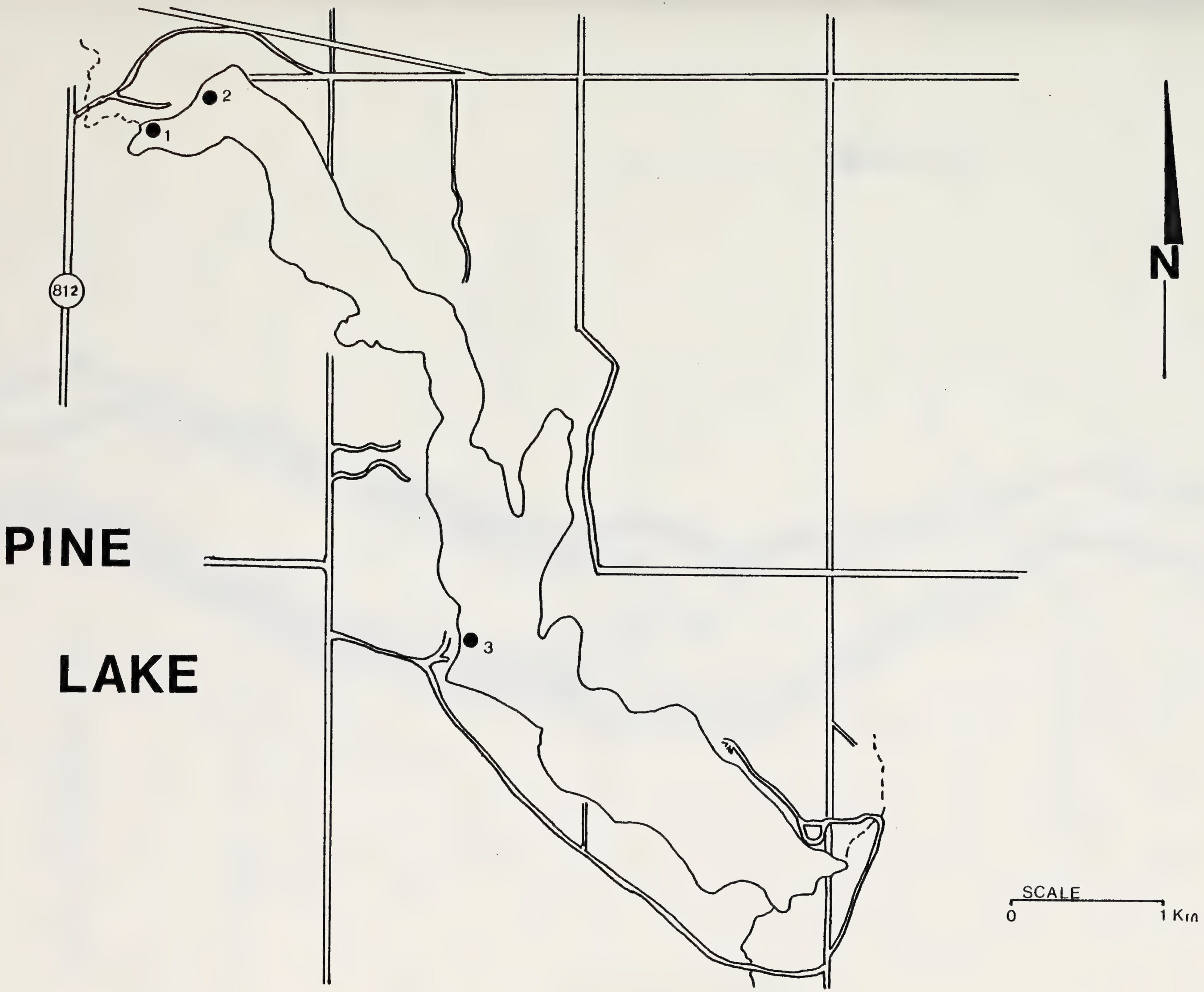

Figure 21: Pine Lake.

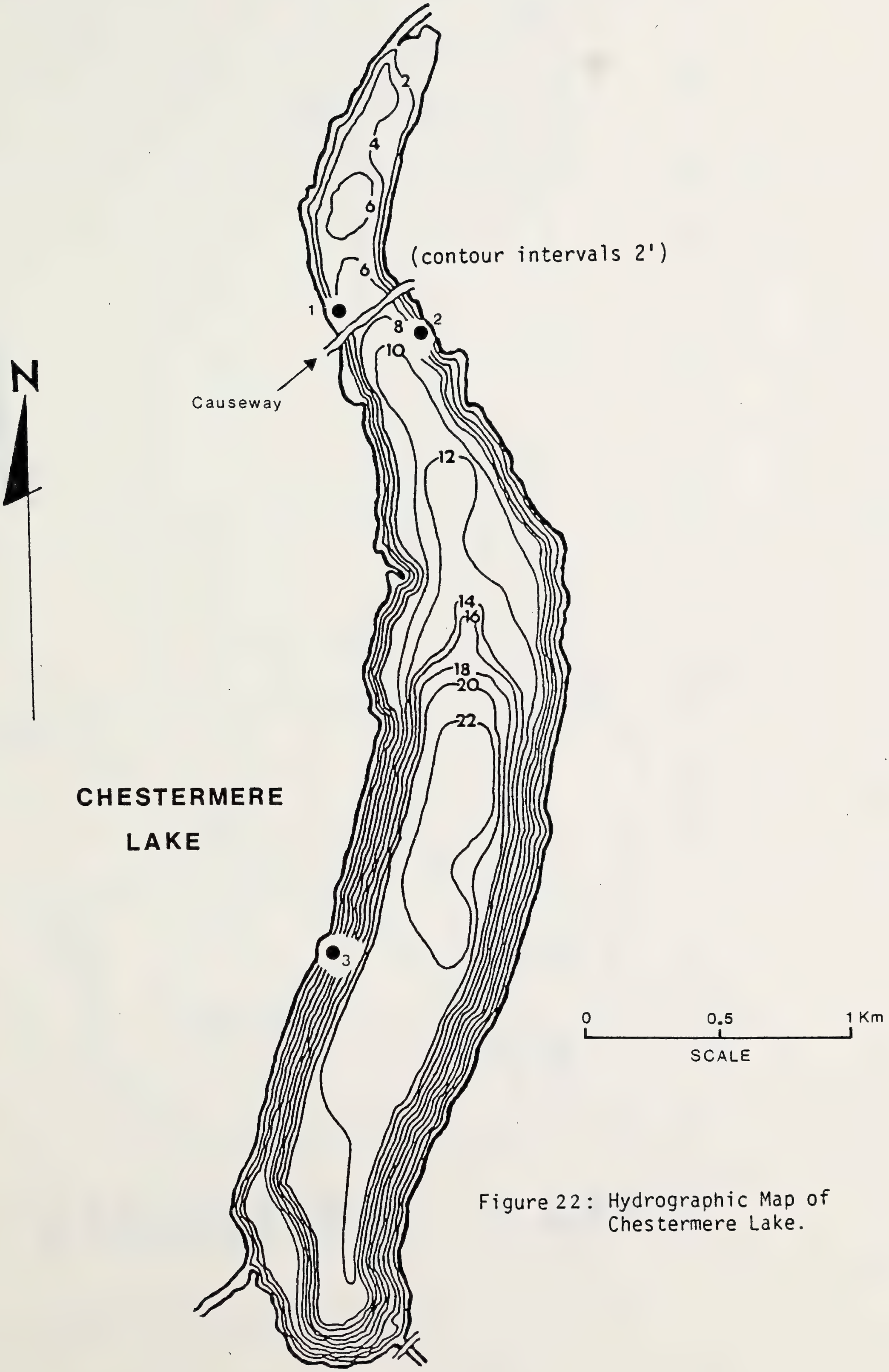

Figure 22: Hydrographic Map of Chestermere Lake.

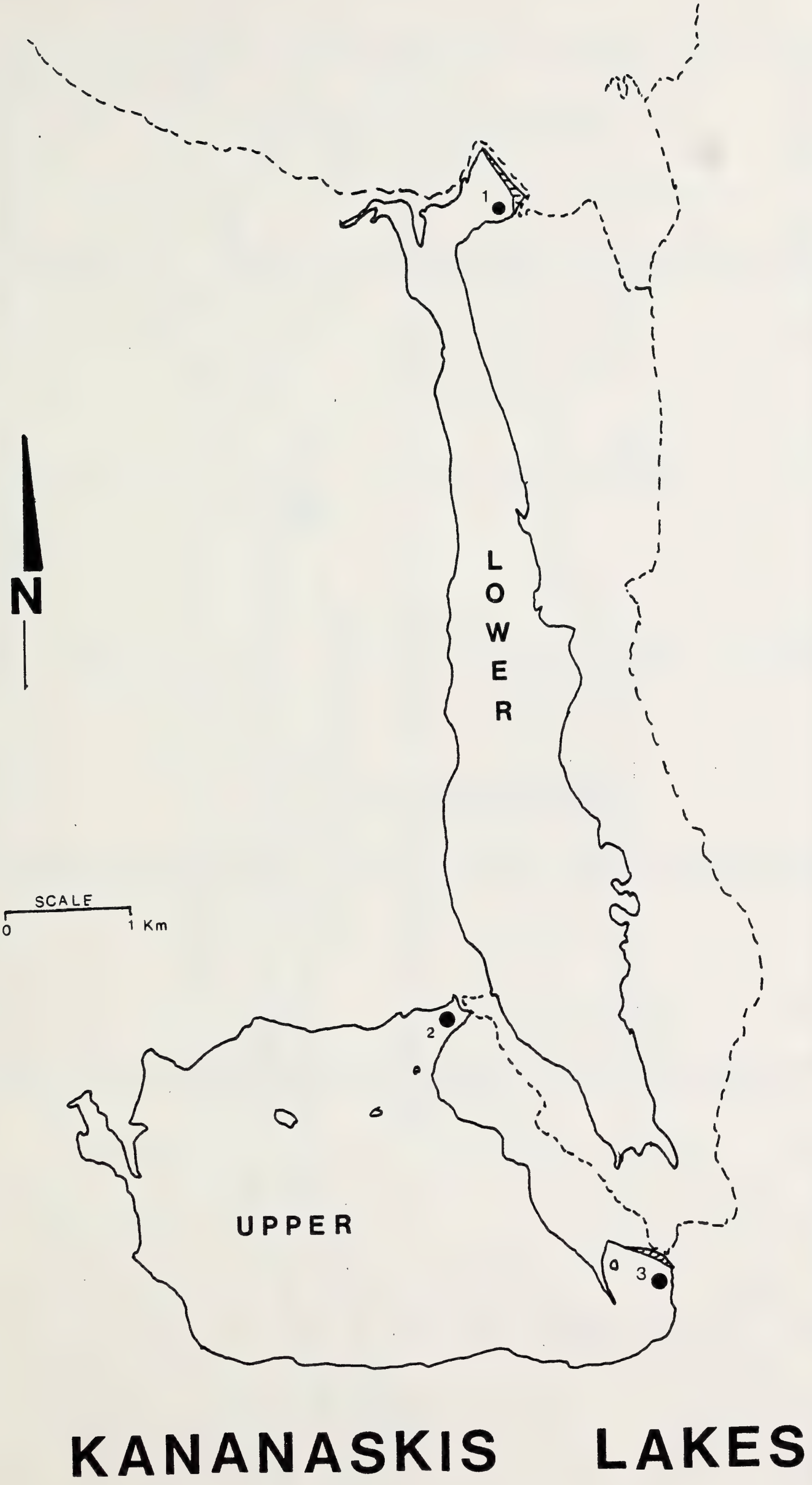

Figure 23: Kananaskis Lakes.

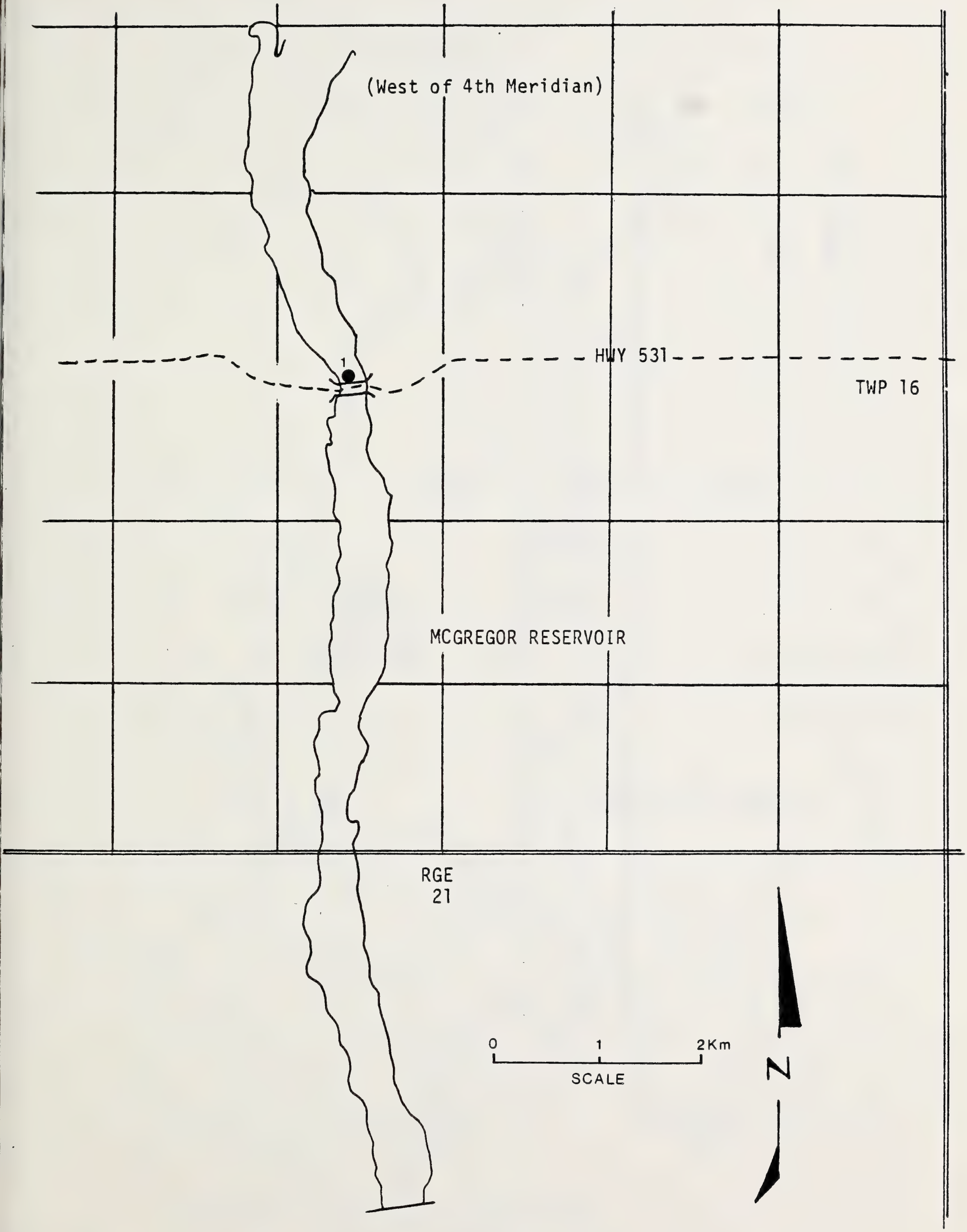

Figure 24: McGregor Reservoir(southern portion).

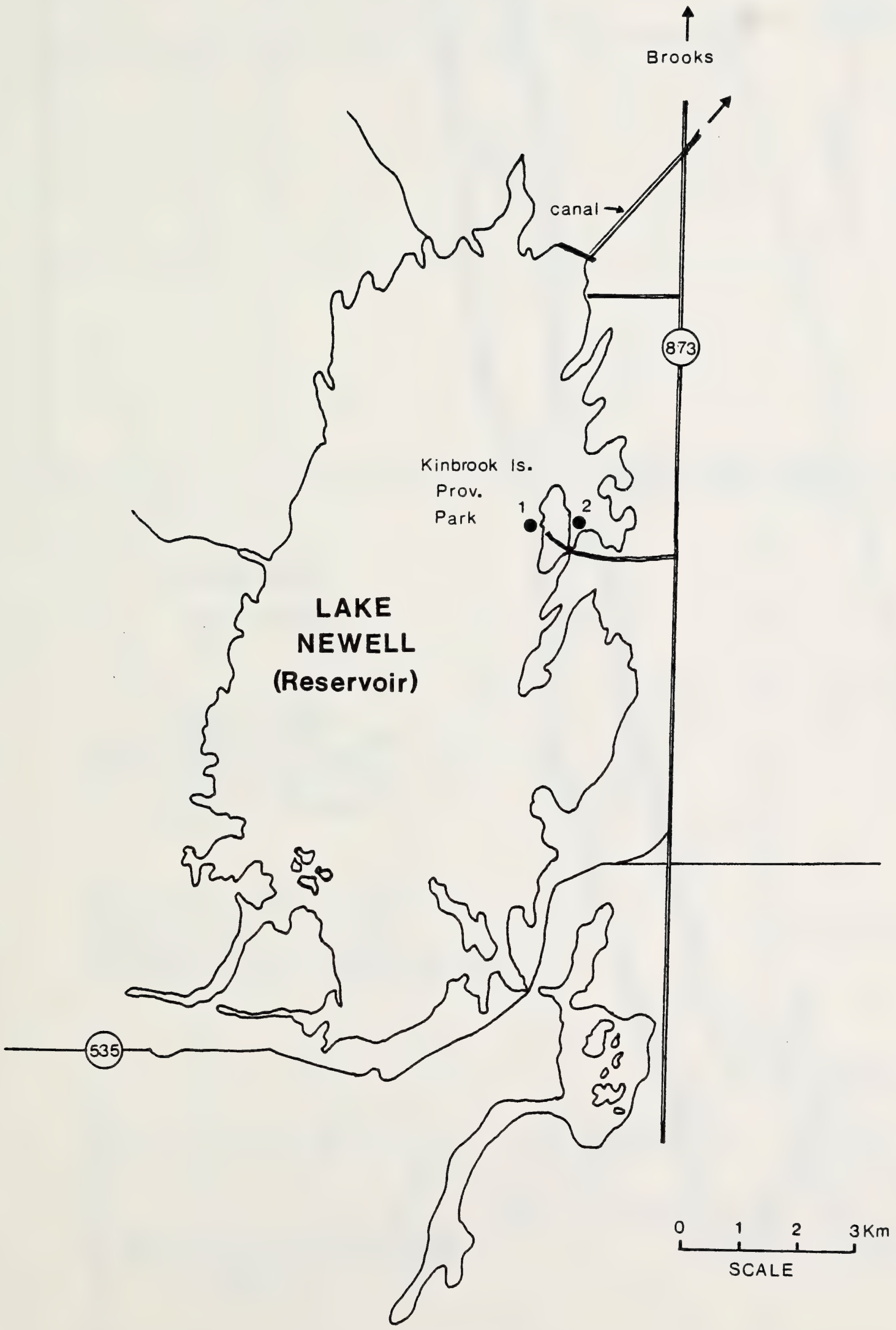

Figure 25: Lake Newell Reservoir.

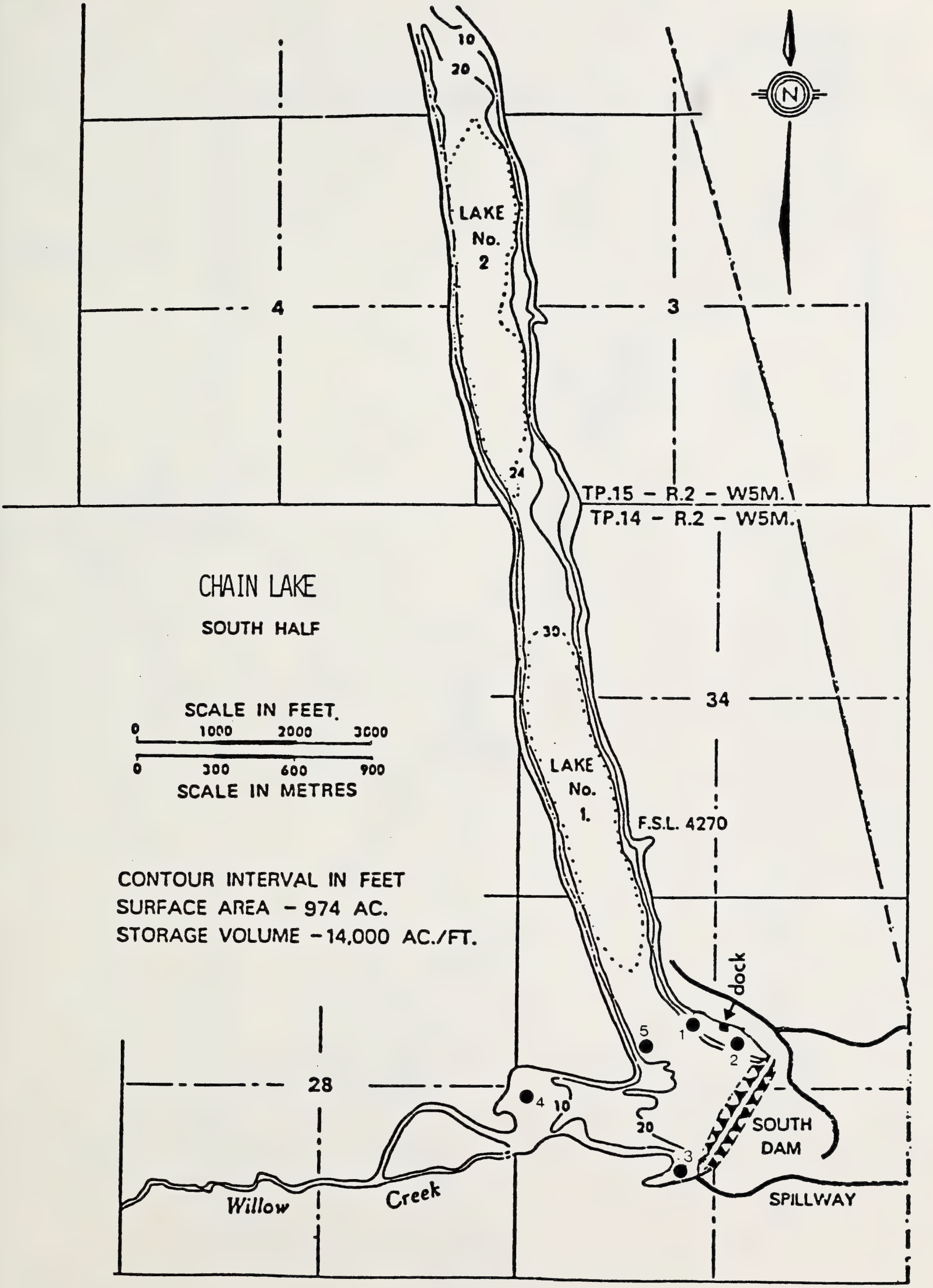

Figure 26: Hydrographic Map of Chain Lake Reservoir.

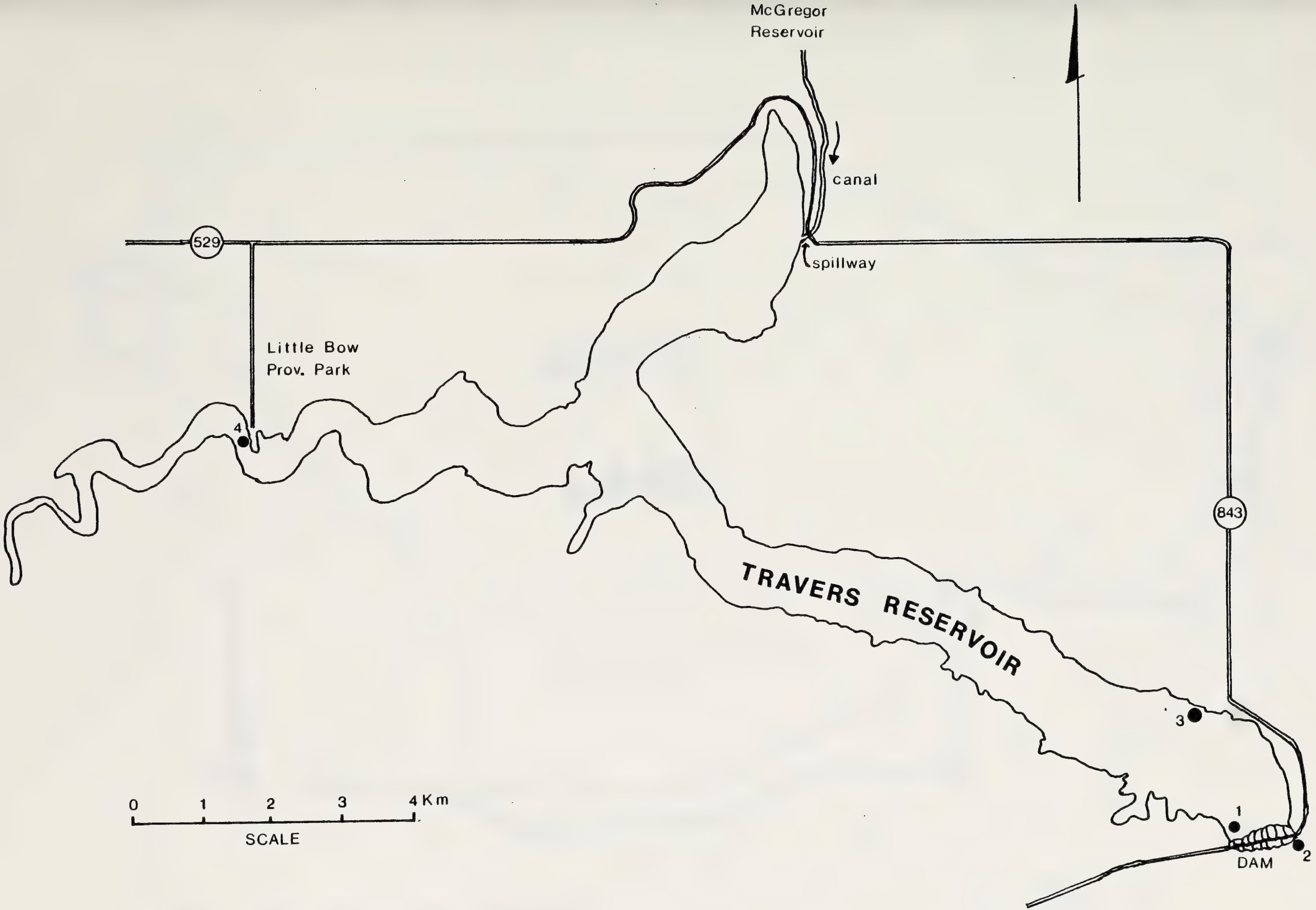

Figure 27: Travers Reservoir.

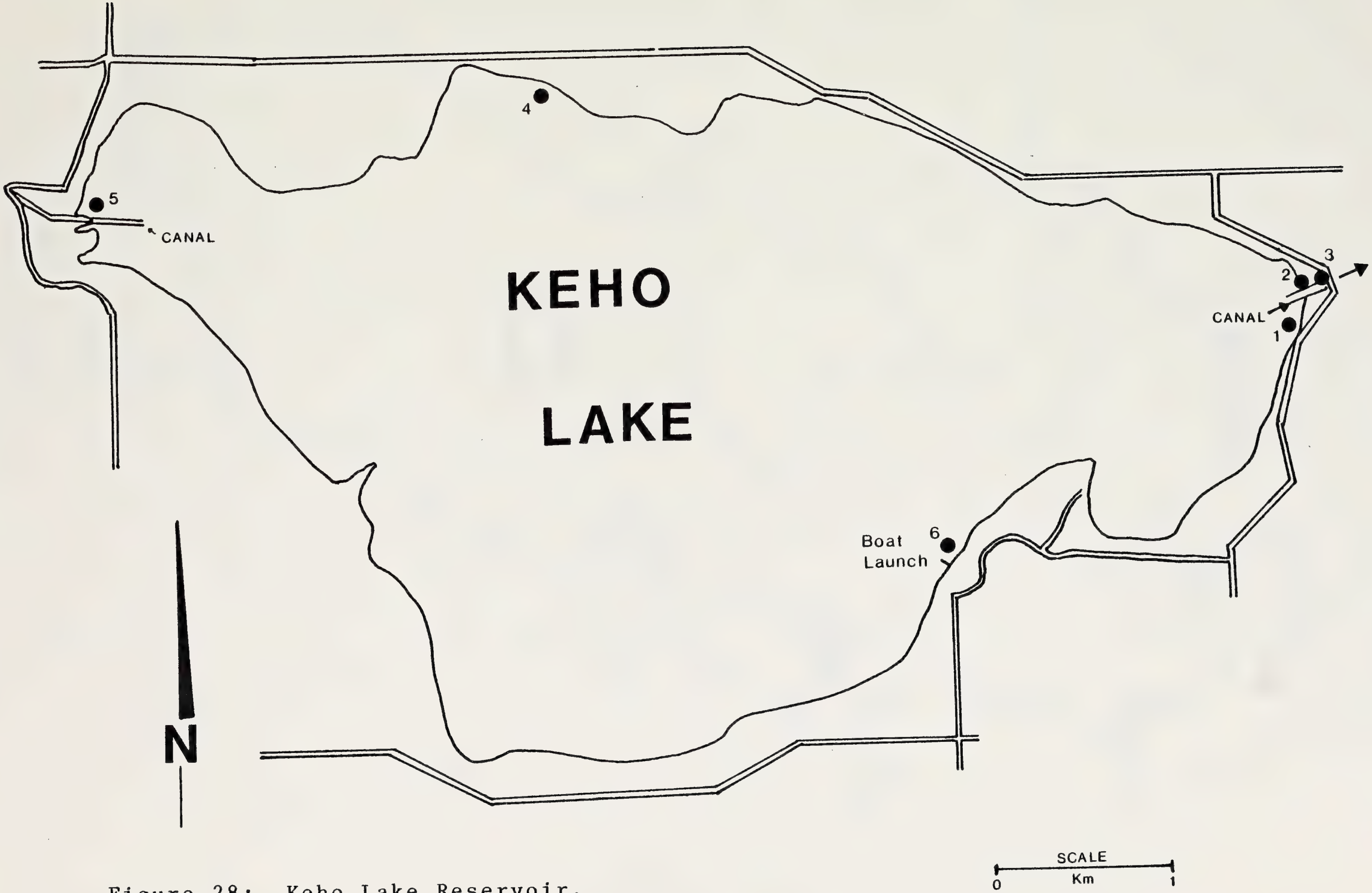

Figure 28: Keho Lake Reservoir.

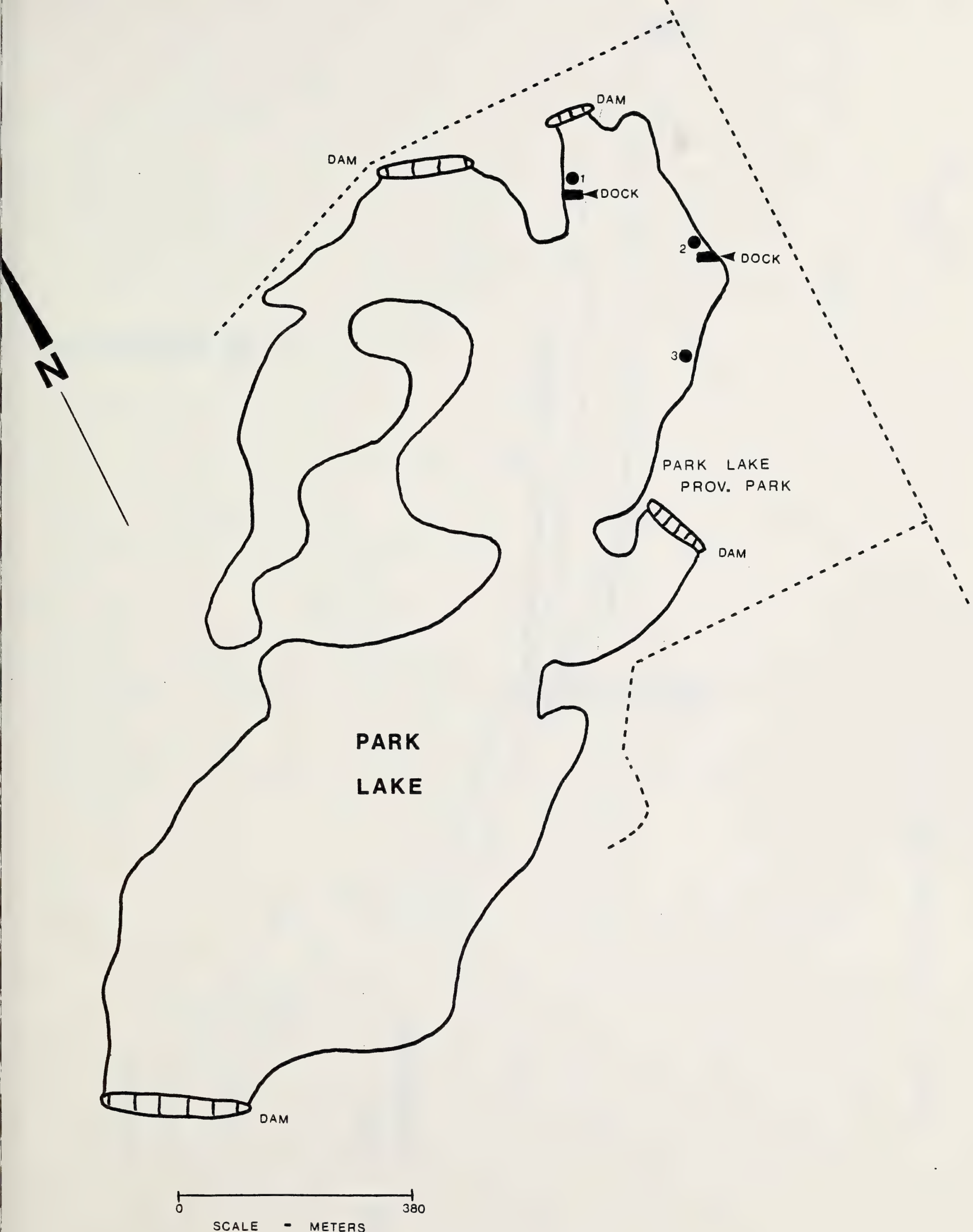

Figure 29: Park Lake Reservoir.

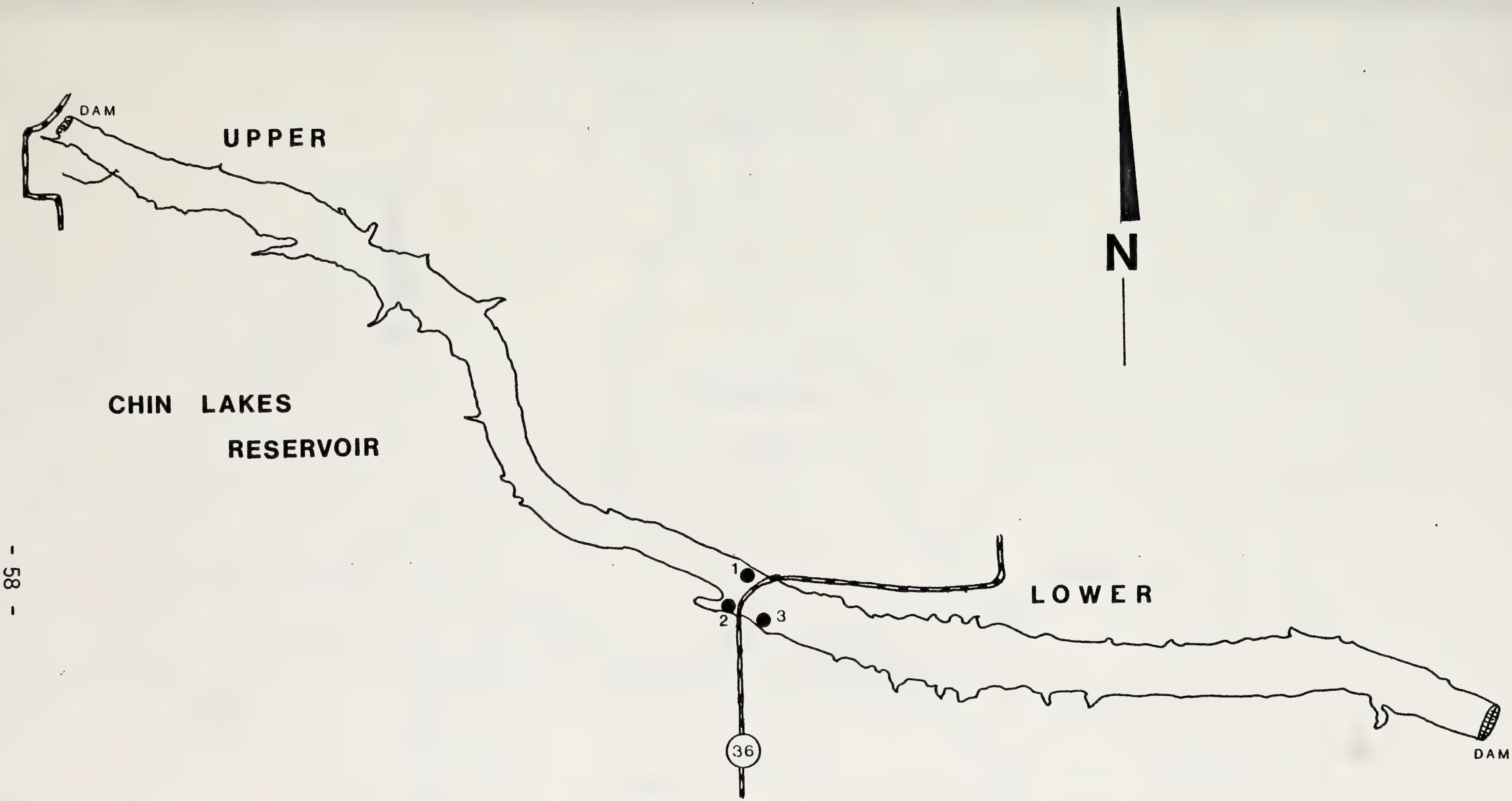

Figure 30: Chin Lakes Reservoir.

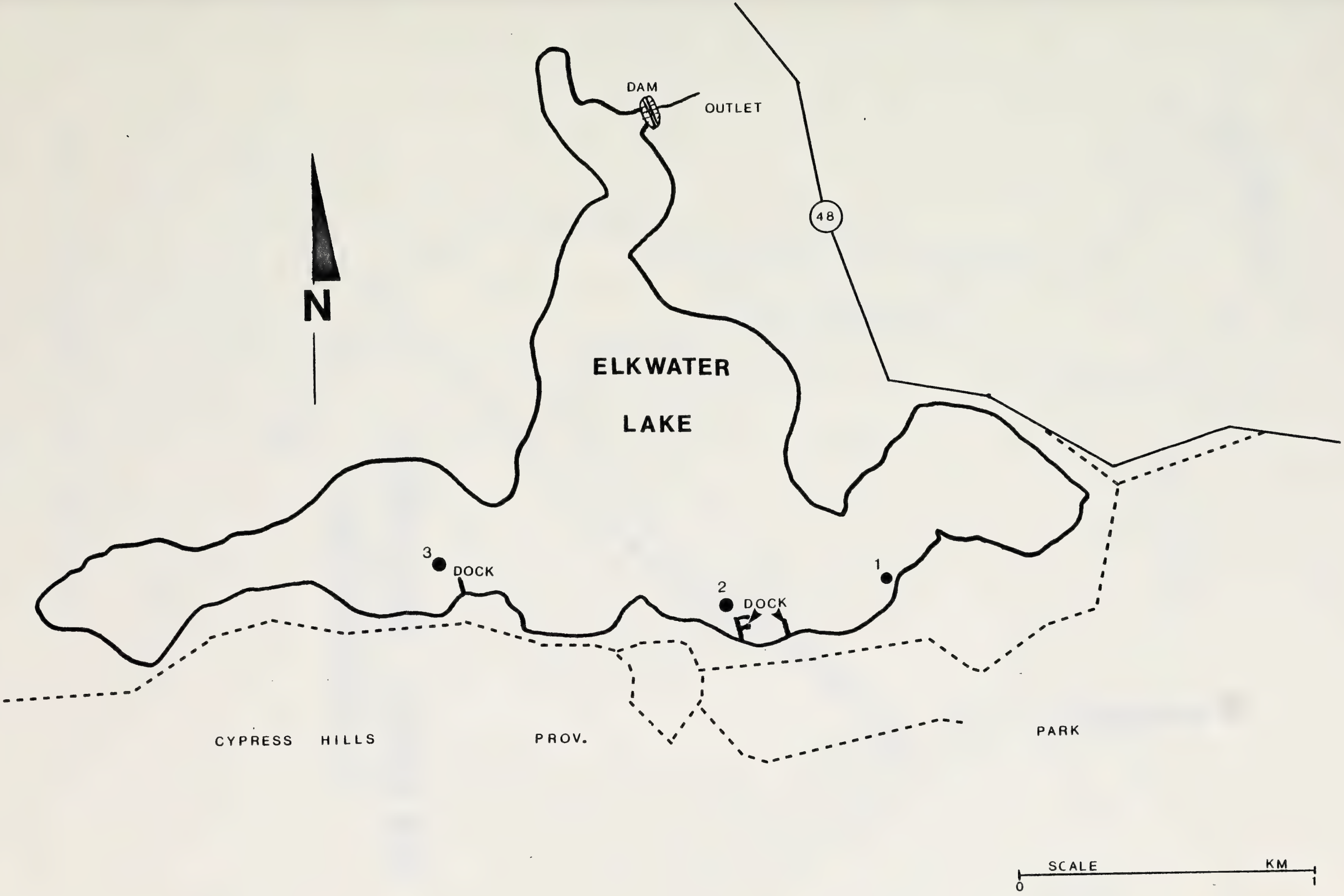

Figure 31: Elkwater Lake.

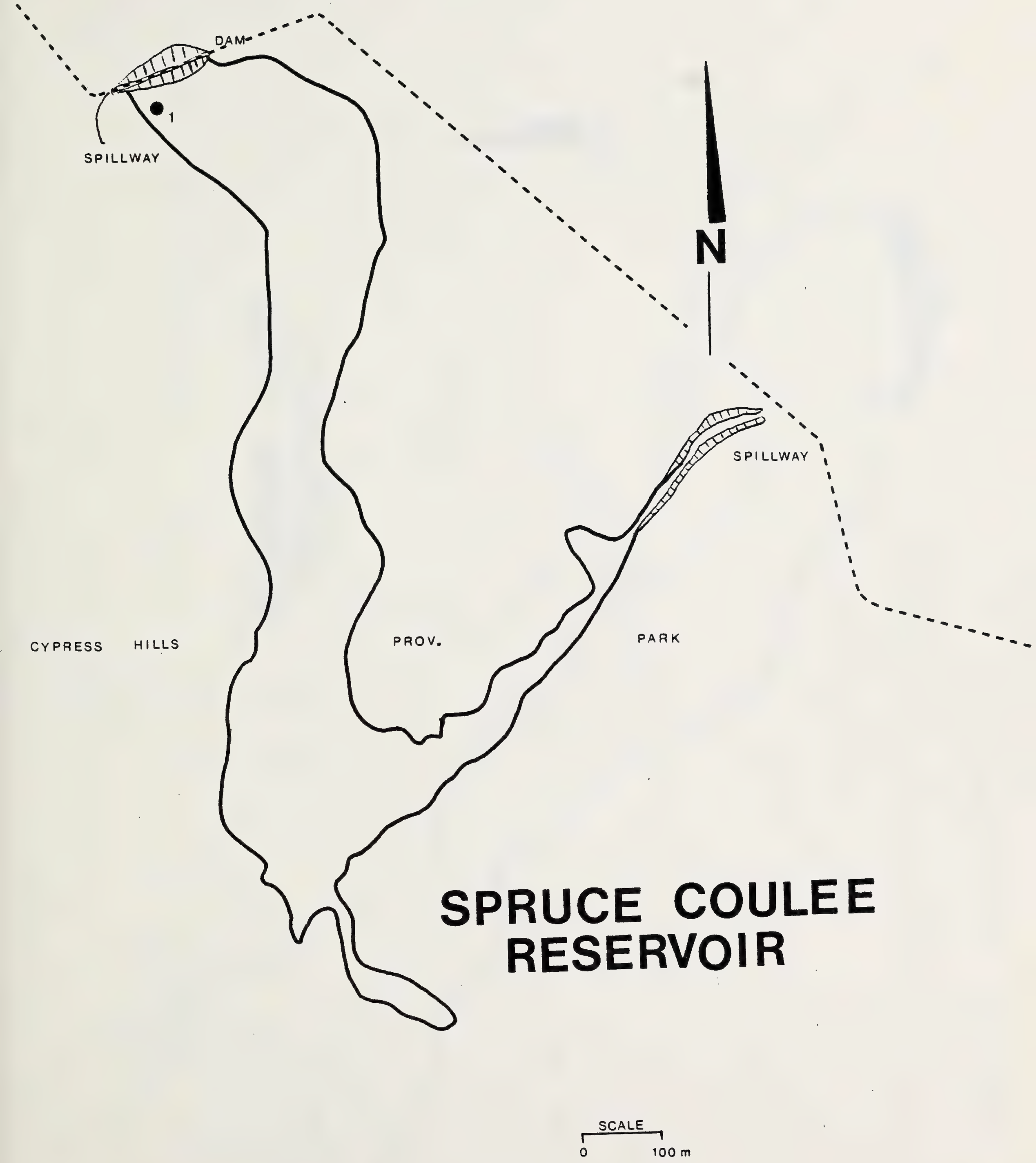

Figure 32: Spruce Coulee Reservoir.

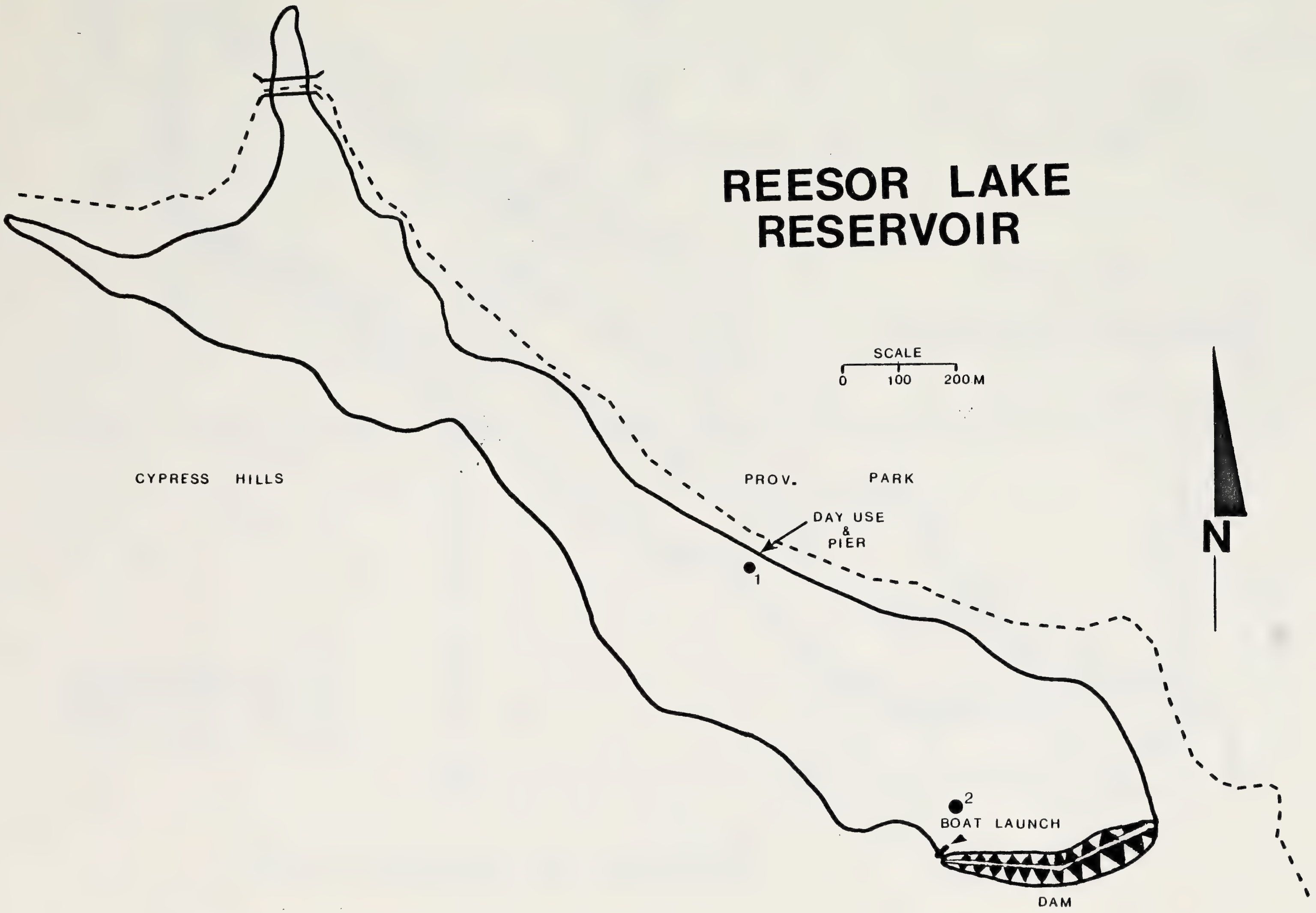

Figure 33: Reesor Lake Reservoir.

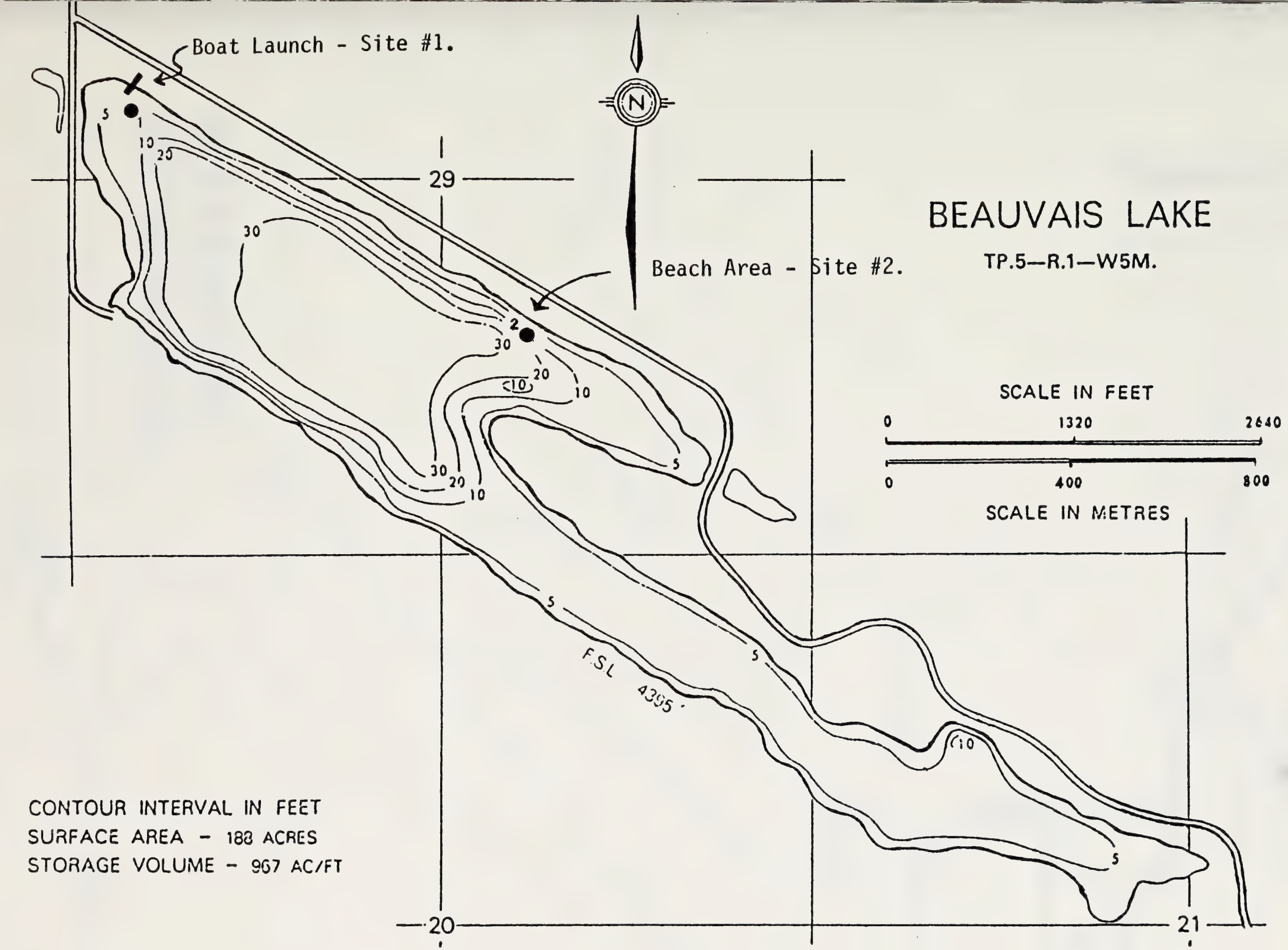

Figure 34: Hydrographic map of Beauvais Lake.

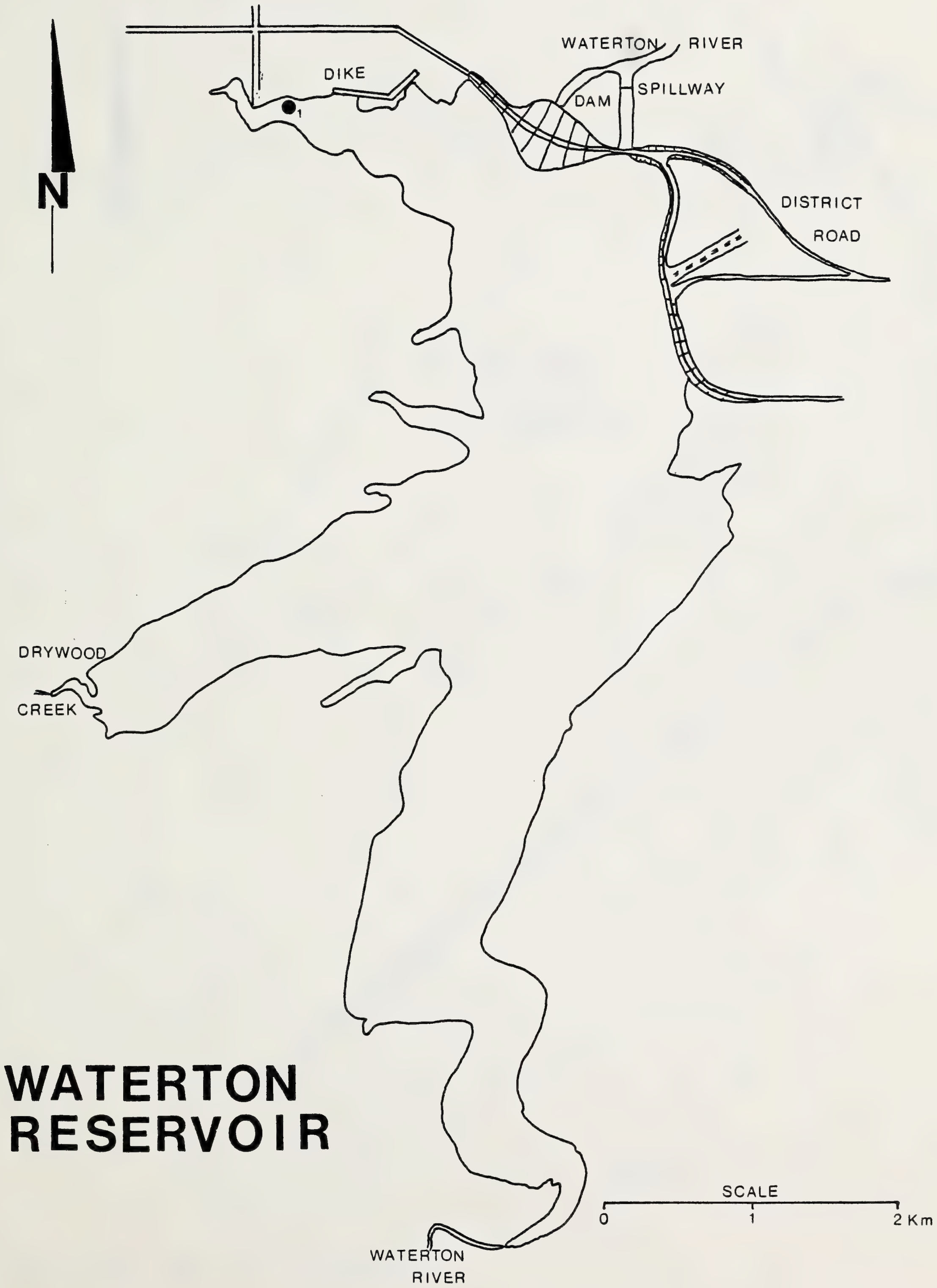

Figure 35: Waterton Reservoir.

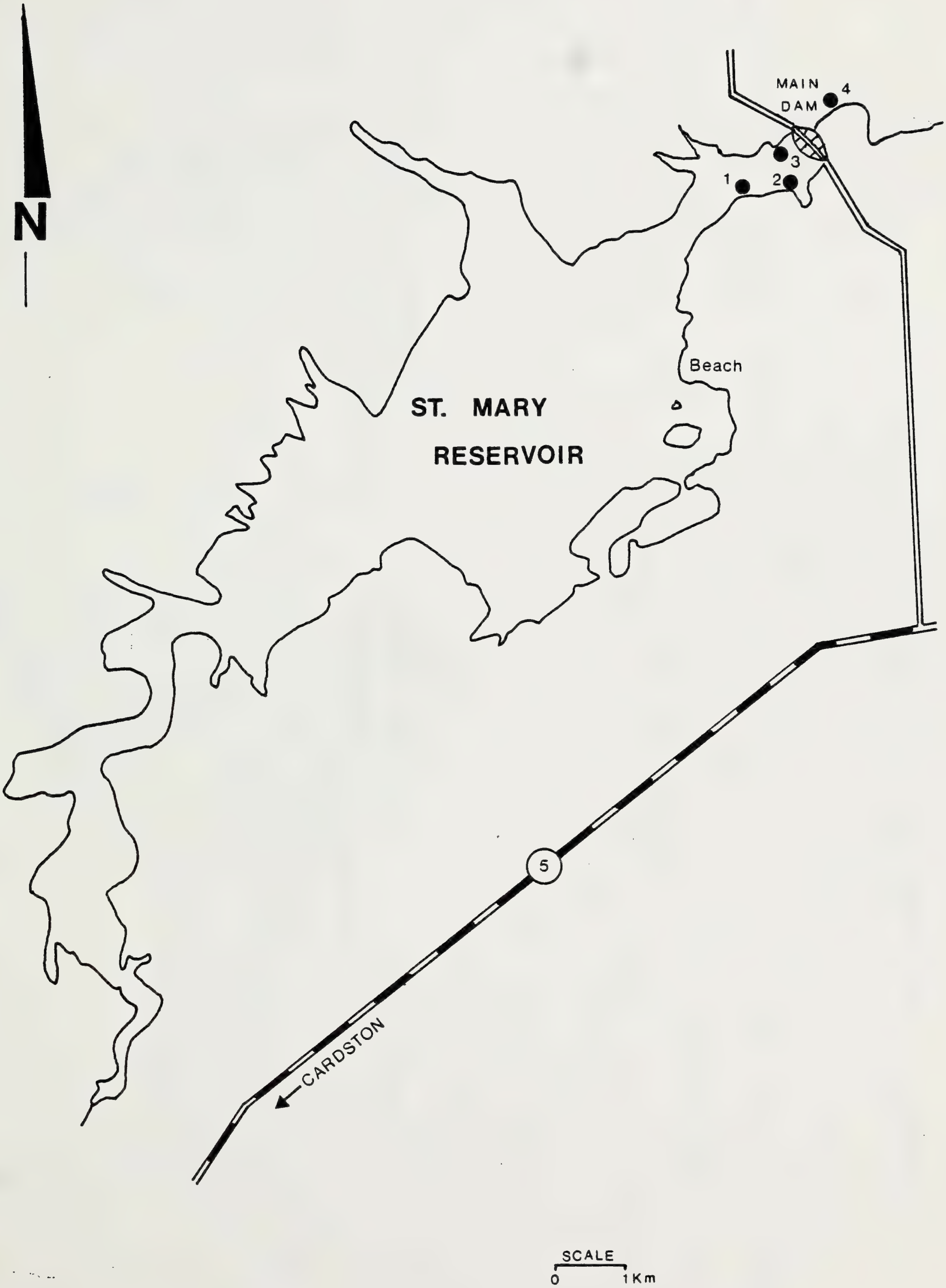

Figure 36: St. Mary Reservoir.

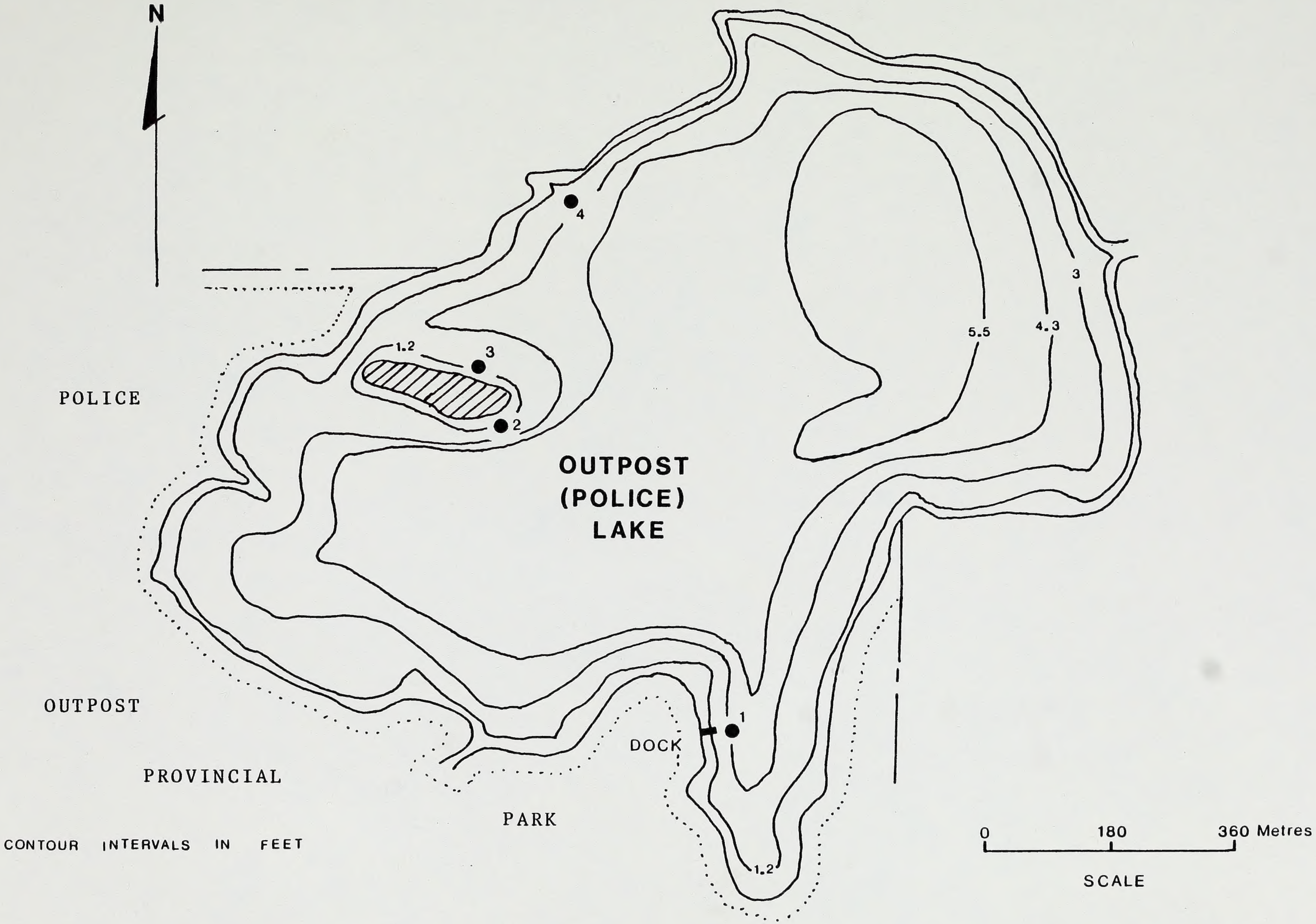

Figure 37: Hydrographic Map of Police (Outpost) Lake.

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